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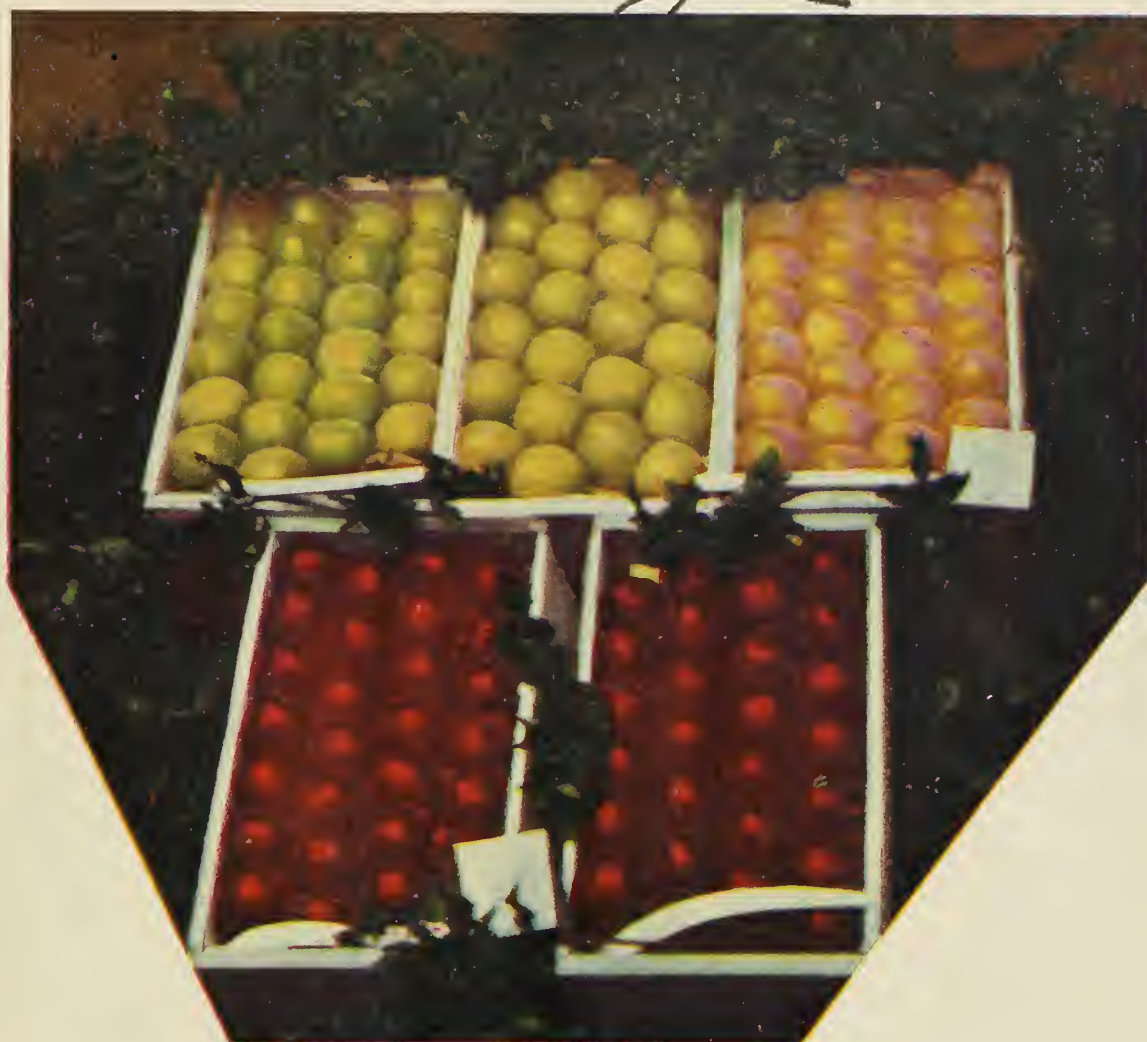
VOLUME XV

SEPTEMBER, 1920

U.S. DEPARTMENT OF AGRICULTURE
NUMBER 3

Apple Packing Edition

Silvany



A HANDSOME COMMERCIAL PACK OF APPLES
Packed for Exhibition Purposes

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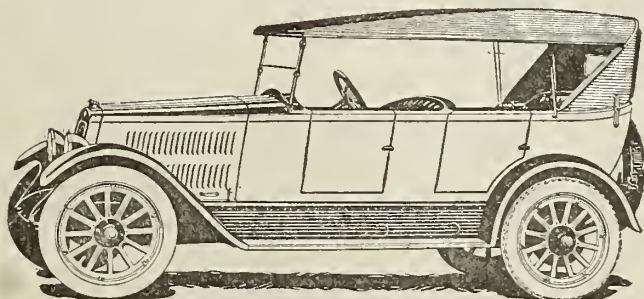
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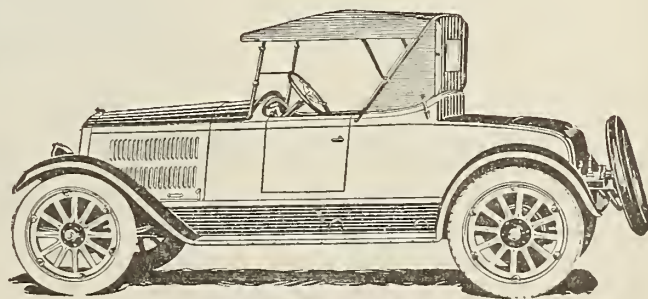
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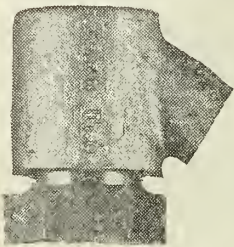
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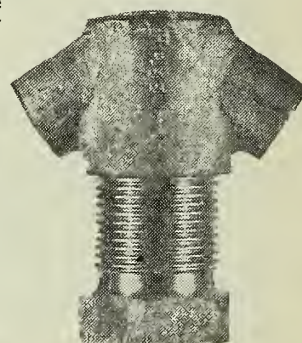
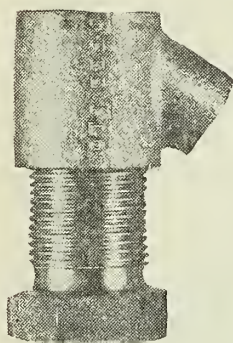
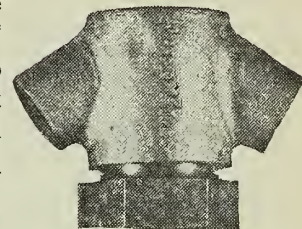
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This valve is so clearly designed for efficiency and its price being less than more widely advertised valves of less capacity, we believe that in presenting this to the fruit growers in the Northwest that it is bound to meet with success in every locality, as has been accorded it in the Wenatchee Valley.

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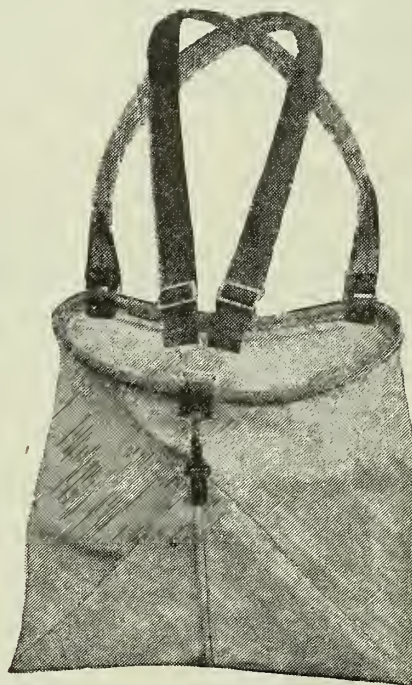
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PORTLAND, OREGON, SEPTEMBER, 1920

NUMBER 3

Practical Hints on Packing Apples and Pears

By An Experienced Packer

GRADING apples is so closely related to packing that where it is possible a long step toward quicker methods of grading can be had by having the pickers do some of the grading in the orchard. This is possible where pickers are paid by the day, instead of by the box. Grading can then begin with the picking of the fruit from the trees.

Pickers, after having taken the fruit from the trees into pails, bags or other receptacles, should be required to empty them into the apple boxes, which are to be taken to the places for storing, not by pouring, but by hand, and then as though each fruit was an egg. During this transfer the picker could look for fruits badly blemished, and place them in boxes, in order that they may be gathered and disposed of as conditions require later. The fruit so assorted may then be stored in the place for receiving them, and left until such time as the owner is desirous of packing, at which time it could be carefully assorted in readiness for the packers.

In building a packing house, the opening between the storing room and packing shed should be made in the center of the side of the storing room, and not in the end of the building. By using the proper and most complete packing table all the materials needed in packing may be readily at hand and save considerable loss of the packer's time in waiting to be supplied with same. The packing tables should be equipped with proper and handy places for lining paper, layer board, wrapping paper, etc., and so arranged that the packer may have three different sizes before him at one time. For instance, while packer No. 1 is packing, say, 72, 112 and 125, packer No. 2 may utilize the three probable other sizes that No. 1 cannot then use—80, 88 and 96. As packer No. 1 completes one of his numbers he has but to notice the size about completed by No. 2, and if the contents of the tables used by No. 1 and No. 2 show a sufficient quantity of the sized apples used by No. 2 in completing his nearly finished box, No. 1 may then commence a box of the same size. In this way all the sizes may be kept cleaned from the tables

and a packing of the different sizes distributed to each packer in proper turn. Of course the most important feature of a successful packing crew is a perfect system. A complete system cannot be brought about by proper fixtures alone. In fact some very inconvenient packing sheds have, with careful thought of the foreman, brought out a system seemingly impossible to attain.

Packing is the classification of fruits into their proper sizes by placing the fruits of the same size solidly into boxes in such a manner as to insure uniformity of appearance, neatness and protection from bruising. The purpose of careful packing is to make the box of fruit attractive as possible, and thereby receive the highest possible price for it.

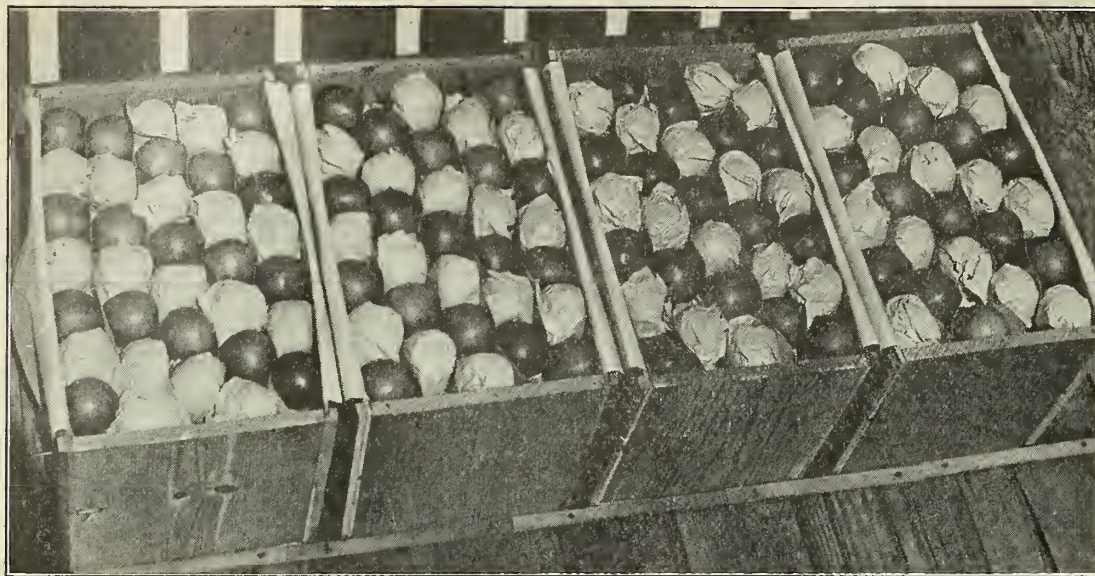
There were a number of different systems of packing in boxes followed on the Pacific Coast for a number of years, and this has brought about the adoption of a system that allows the packing of every size or shape of apple grown neatly and solidly in one sized box, the Northwest Standard (10½x11½x18, inside measurement, containing 2,176 cubic inches).

At this point I wish to warn the purchaser of boxes against improperly made boxes, for there is nothing so distasteful to the trade as a poorly manufactured box. Do not buy apple boxes with heads less than three-fourth inch in thickness. Do not buy boxes with sides less than three-eighths inch in thickness. Do not buy boxes with top and bottom board thicker than one-fourth inch, for these must be thin and springy. Do not buy boxes, unless the top consists of two pieces and the bottom of two pieces, with two cleats each for top and bottom. Do not use sides made of two pieces, even though tongued and grooved, for they are much weaker than single-piece material of the same thickness, and when a box is tightly packed will bulge, and as apple boxes should always be handled on the sides, when so handled will undoubtedly damage the fruit. This is also the reason for insisting on full three-eighths-inch thickness in these pieces.

In packing apples, the size of the apple is invariably determined by the

diameter of the apple from cheek to cheek at the widest point, never from stem to blossom, hence the reason why an apple should never be placed stem or blossom-end toward the sides of the box. Hardly an apple is absolutely circular in shape at its greatest cheek circumference, and it is here that the packer may take advantage of this irregularity in packing Ben Davis apples, one of the most difficult of apples to pack, for the reason that they are about the same distance from stem to blossom as from cheek to cheek, and will not, when turned, have brought about the results usually attained by turning in this manner. However, as before stated, if the packer will carefully save for the end of the boxes those in even a slight degree irregular and place at the ends so as to keep the apples lowest where they will not prove too high, and by the use of the more nearly circular ones through the center, a beautiful crown may be brought about.

In packing a two-two pack, start by placing one apple in the lower left-hand corner and the other in the center of the space left from the cheek of the apple placed in the corner to the opposite side of the box. This will leave a space on each side of the apple last placed of equal width. Settle firmly back into the spaces then left two more apples in exactly the same relative position on the other side of the box. Continue this until the opposite end of the box is reached, where there will be a space which, by a firm pressure downward and toward the packer, will enlarge the space sufficiently to permit of the last two apples being fitted snugly into place and at the same time take all of the extra slack out of the layer. Begin the second layer by placing the first two apples into the two little pockets formed by the spaces and the first four apples in the first layer, and continue to the end of the box as in the first layer, ending up with last two apples in the pockets similar to those at the beginning of the second layer. Continue to build up the third and fourth layers in the same way as the first and second, always placing the apple in the pockets formed and



1—A commercial pack of apples showing the fruit wrapped and unwrapped for exhibition purposes.

never directly over the cheek of the apple below (except, of course, where necessary in the straight pack, which is as little used as possible, as it is very likely to bruise the fruit and create a blemish).

Oftentimes, in order to keep the two-two pack from coming too high at the ends of the box on sizes ranging from 41 to 72, inclusive, particularly on the larger of these sizes, it is necessary, because of the length of the apple, to turn all the layers of the box so that the apples are either stem or blossom toward the top or bottom. Where apples are like the Wagener, or some of the other flat varieties it sometimes becomes necessary to turn a row or two at one end of each layer in order not only to lower the ends but to fill up in length the space yet left, alternating so that the rows turned with the stem or blossom toward the top or bottom of the box will be on layers Nos. 1 and 3, on the end of the layer farthest from the packer. The reason for turning in this way is that, until one layer is almost completed, it is hardly possible to know how many rows must be turned in each layer. This can be determined as the end of the first layer is reached, and the same number turned in each succeeding layer as above stated, first at one end and then the other. The reason for alternating the turning of the apples on each layer is that, should the nearest rows on each layer and the farthest be turned and the rest on edge, it would make the ends too low and the change from turned apples to those checked abrupt and unsightly, besides allowing the cover to rest only against the checked apples, and allow an opportunity for the flat ones to become loose in the box. No definite rule can be given for turning of apples in this way other than may be determined by trial of each variety. Should more than two rows be required to be turned it would either indicate that the packer was not making the rows fit snugly across the box or that the variety was decidedly flat and should be packed entirely on edge.

Never allow the apples in the rows to be loose from side to side of the box. This does not mean that they should be forced in so tight as to bulge the sides, but just tight enough that there will not be a space the thickness of a sheet of paper between them. Make the apples fit snugly across the box. The next greatest fault is not keeping the size of all the apples the same in each box. If you do not have the size of apple on the table that you are packing in the box either wait for more of the proper size or start the size you have on the table in another box.

Among other points for the beginner or the improperly taught to remember is never to load the packing table with too many boxes of apples at the same time. The more apples and the more sizes from which to choose the apple needed adds to the difficulty of choice.

The three-two pack is started with three apples across the end of the box, one in each of the corners nearest the packer and one in the middle. Then place an apple in each of the two pockets thus formed and then three in the pockets next formed until the end of the layer is finished. This layer may end three across or two across, as the case may be, determined by the size of the apple used. However, the next layer will

start with two apples placed in the pockets formed by the first five apples and space. Continue this until the box is completed.

Pear Packs.

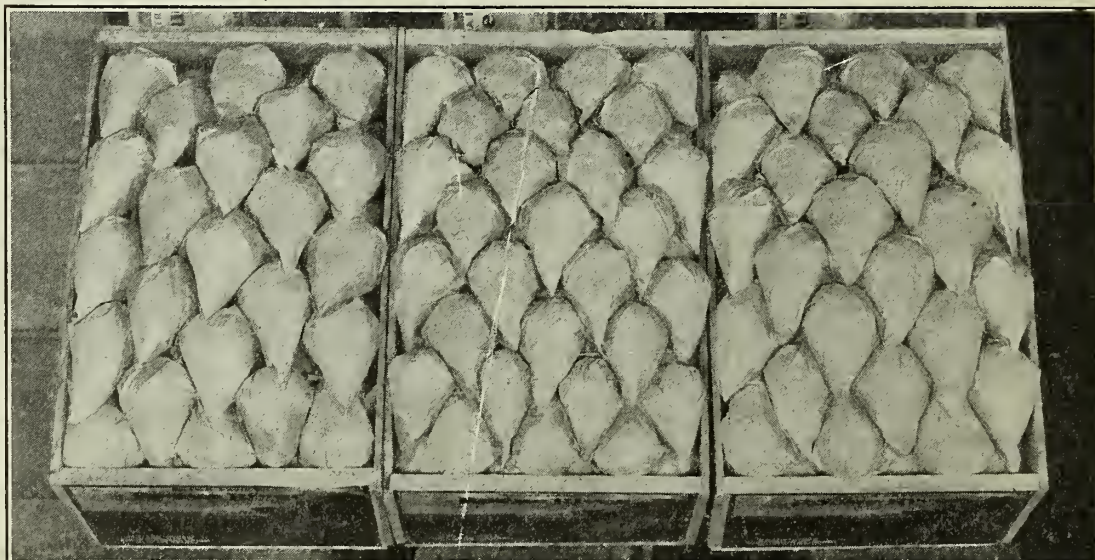
Pears are usually packed out in two grades designated as fancy and "C" grade and are packed in the standard pear box, 8½ inches deep, 11½ inches wide and 18 inches long inside measurement. The outside length of the box should be 19¾ inches. The packed boxes should weigh from 50 to 51 pounds gross.

In grading pears the fancy grade should consist of pears that are hand-picked, clean, sound and free from insect pests, sunscald, scab, scale or other diseases, worm holes, stings, broken skin, bruised, or evidence of frost by russetting, rough handling or other serious defects, excepting russetting covering a total area not exceeding one inch in diameter, excepting it be upon varieties which are naturally russeted more or less. Slightly misshapen or slightly rubbed fruit may be admitted to this grade. "C" grade pears consist of all fruit which does not meet the requirements of the fancy grade as to blemishes and deformities, but which in every way is sound and merchantable and free from disease.

In defining the regulations for packing pears, the Washington state grading rules state that the term "properly packed" shall refer to the arrangement and the amount of pears in each box. Pears to be properly packed shall be arranged in the box according to approved and recognized methods and all boxes shall be tightly filled but the contents shall not show excessive or unnecessary bruising as a result of the pressure exerted in lidding the box. Each packed box must show a minimum bulge of one-half inch on both top and bottom.

The most largely used standard pear packs are as follows:

Tier	Row	Style	No. in Box
Five	4-4	3-3	120
Five	5-4	3-3	135
Five	5-5	3-3	150
Five	6-5	3-3	165
Four	4-4	3-2	80
Four	5-4	3-2	90
Four	5-5	3-2	100
Four	6-5	3-2	110



2—A good commercial pack of pears.

Observations On the Evaporation of Prunes

From Investigations Made by C. I. Lewis, F. R. Brown and A. F. Baras for the Oregon Agricultural College

IN the evaporation of prunes certain terms are generally used which may not be well understood by growers who are engaging in the work for the first time. A brief definition of these terms will probably prove helpful to such people. "Drying time" is figured from the time the fruit is placed in the heating chamber to the time it is removed as dried fruit. "Weight per bushel" refers to the number of pounds of dried fruit from sixty pounds of fresh prunes. "Size" refers to the number of dried prunes it takes to make a pound, such as 30-40's, 40-50's, etc. "Drying percentage" is the relative amount of dried fruit that is obtained from a given amount of fresh fruit. "Dobies" are prunes which dry more slowly than most of the fruit on the tray and have to be re-dried. "Bloaters" are prunes which puff up until the skin becomes very tight so that they often explode and are worthless, examination shows that nothing is left but skin and pit. They are apt to have a burned or scorched flavor. "Dripping" refers to an accumulation of thick sirup which oozes from the fruit during the process of evaporation, generally caused by using unripe fruit and by improper methods of evaporation. Too high a temperature at certain stages of evaporation may be partly responsible. Poor ventilation is also a factor. "Sweating" refers to the placing of prunes in piles or bins and allowing them to remain until the entire mass has a uniform moisture content. "Sugaring" refers to the accumulation of a white or sugary substance on the outside of the fruit. "Frogs" are cured prunes which are very much mishappen, probably due to the fruit being unripe. "Processing" refers to the steaming of the prunes just before they are packed in the boxes for market. It is a cleansing, softening process and facilitates proper packing.

Buildings for Evaporating Prunes. No hard fixed rules can be formulated which will apply in detail to all buildings used for the evaporation of prunes. Every grower must study his own evaporator carefully, so that he may know under what conditions he can secure certain temperatures, certain air circulation, and a combination of factors which will turn out a high-grade fruit. What might apply to one building might not to another. There are certain fundamental principles, however, that apply to all buildings. For instance, lack of ventilation or air circulation would have the same effect regardless of where the prunes are dried. The use of abnormally low, or abnormally high temperatures would have the same influence in any building, as far as the type of product turned out is concerned. Prunes require a great deal of air, which should move at the rate of at least 600 feet a minute. They should have a starting temperature of about 130 to 145 degrees, and a finishing temperature not higher than 160 degrees. A high humidity should prevail until the

fruit is thoroughly heated, then the humidity should be gradually decreased until it is a little less than the percentage of moisture desired in the finished product. It is well to have the tunnels thoroughly heated before the fruit is introduced. Some growers claim that they start prunes at as low a temperature as 90 to 115 degrees. We doubt, however, the wisdom of such a practice, for with such temperatures rapid fermentation of fruit may take place, which means a loss of sugar and a deterioration of the product. Certain molds may form at the lower temperature and brown rot can work under such conditions. We have not carried on sufficient experimental work to state arbitrarily just what temperatures are always best, but our results do show, and our observations with many growers indicate, that the temperatures we have advised produce splendid results. It must be remembered that warm air will absorb more moisture than cold air; that if you have a large volume of hot, dry air, moisture that is given off from the fruit will be absorbed very rapidly. Just how much moisture the air can hold and still be of value in prune drying, is a subject needing much investigation. Many tunnels are so long that the air when it reaches the end of the tunnels is practically valueless for evaporating purposes, as it is practically saturated with moisture, and giving out moisture rapidly into the air tends to cool it and thus reduce the moisture-holding capacity. As the prunes are nearing the time when they are ready to be taken from the trays, they gradually become hot. If, however, they are allowed to become too hot before they are really finished, the cells may rupture and leak, and dripping will take place.

Thermometers. Much of the poor work in evaporation of prunes is due to the fact that the grower is using a poor thermometer. Cheap thermometers should not be used in prune evaporation. It would pay all growers to use some self-recording thermometer which would record the temperature during the entire twenty-four hours. Such a thermometer will easily indicate what happens when the night worker goes to sleep, and will be an aid in explaining many of the poor results obtained.

Air circulation is extremely important. Good air circulation and proper ventilation must prevail at all times. It is possible to have too rapid circulation and to have the ventilators draw out the air too quickly. For example, in evaporating vegetables, it is very desirable to have the air move rapidly at a relatively low temperature of about 140 degrees. These results are obtained by blowing air over steam pipes and causing it to move rapidly over the vegetables. Some fresh fruits should be dried in this same way. The aim is to have the product when finished resemble, as much as possible, the undried product. With prunes, however, the

aim is entirely different. We are really after a cured fruit. While it may be desirable so to handle the evaporator that a high-class product may be turned out in the shortest time, yet we must not make the mistake of attempting to evaporate the prunes so rapidly that an inferior product is the result. Certain changes are taking place in the prune during the process of evaporation. Sugar is forming rapidly and will do so unless the temperature is forced too high on the one hand, or allowed to remain too low, on the other. It is very important to have all the factors influencing drying under the complete control of the operator and influenced as little as possible by outside conditions and climatic changes.

Weather exerts a marked influence on the weight of the fruit obtained from each bushel and on the drying percentage. The influence of weather is well shown in Table I.

TABLE I.—WEIGHT OF FRUIT AS INFLUENCED BY CLIMATIC CONDITIONS.

Year	Weight per bu. Lbs.	Drying percentage
1911—Rainy	17.00	28.33%
1912—Dry	19.89	33.15%
1913—Dry	20.30	33.83%
Maximum in experimental work for 1913	24.40	40.07%
1914—Rainy	17.05	28.41%
Maximum in experimental work for 1914	20.25	33.76%
Average for rainy weather..	17.02	28.37%
Average for dry weather....	20.09	33.49%
Loss due to rainy weather..	3.07	5.12%

The seasons of 1911 and 1914 were much alike. They were both rainy at the beginning of the season and strong southwest winds prevailed. Such conditions are unfavorable to the evaporation of prunes. During the seasons of 1912 and 1913, however, almost ideal climatic conditions prevailed for good evaporation. The average sugar content for 1913 was 15.28 per cent and that of 1914, 12.45 per cent. This will account for some of the difference in weight of prunes, the remaining difference probably being due to weather conditions. From our investigations extending over a number of years, we find that there is a loss ranging from five per cent to nine per cent in the drying percentage due to unfavorable weather conditions. If climatic conditions had been such that the prunes had thoroughly matured, having a very high sugar content, less time would have been required to dry, there being a high drying percentage. This is one reason why Petites dry more quickly than Italians; another reason is because they are a smaller fruit. Investigations will show that some years prunes contain much more moisture than others, are less mature and contain less sugar, and therefore require a longer drying time.

Moisture Content. The question is often asked as to how much moisture prunes should contain after they are evaporated. In our experimental work we have accepted seventeen per cent to eighteen per cent as the proper moisture content. In some cases it has run as

Continued on page 29.

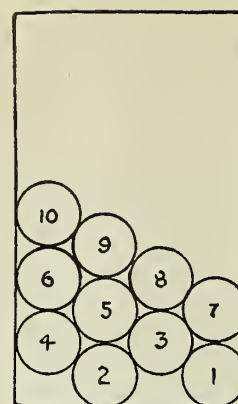
Better Fruit's Standard Apple Packing Chart

All packs to go in the Northwest Standard Box— $10\frac{1}{2} \times 11\frac{1}{2} \times 18$ inches inside measurement

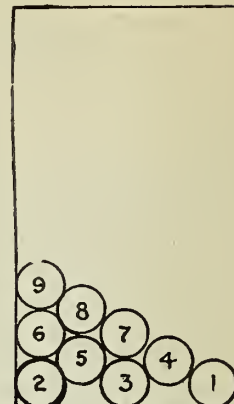
THE apple grading rules and regulations used in connection with the packs illustrated below are the new ones adopted for 1920 by the State Agricultural Department of Washington and are largely the same as those that are used in Oregon, Idaho and Montana with slight variations in the grading. All the packs here described are for the standard apple box measuring $10\frac{1}{2} \times 11\frac{1}{2} \times 18$ inches inside measurement. A description of all packs not illustrated can be found under the heading "Apple Packs."

It will be noted that we have added to our apple packing chart this year illustrations of the 200 and 225 which are what are known as straight packs and the 125 diagonal pack. The 125 pack is now being much used for long apples like the Spitzenberg, Delicious and Ortlely.

The principal changes in the grading rules are in raising the color requirements of some of the solid red varieties and in placing some of the other varieties under a new classification.

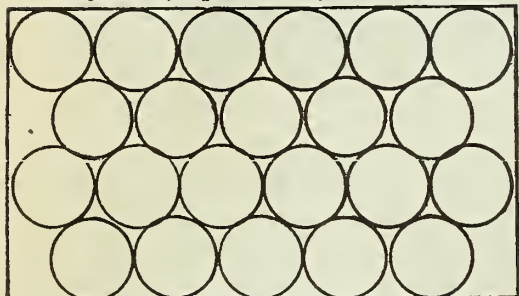


How to start a 2/2 diagonal pack



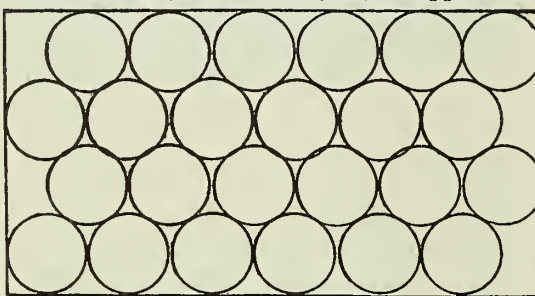
How to start a 3/2 diagonal pack

Diagonal 2/2 pack, 4 layers, 88 apples



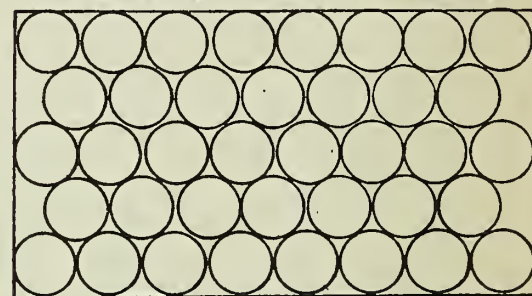
First and third layers

Diagonal 2/2 pack, 4 layers, 96 apples

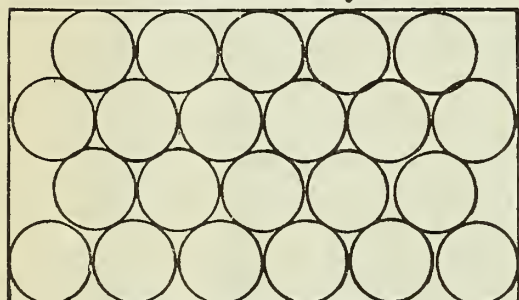


First and third layers

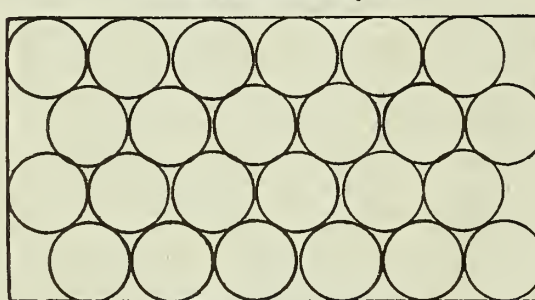
3/2 pack, $4\frac{1}{2}$ tier, 5 layers, 188 apples



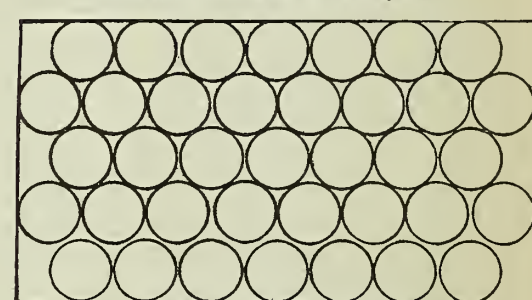
First, third and fifth layers



Second and fourth layers



Second and fourth layers



Second and fourth layers

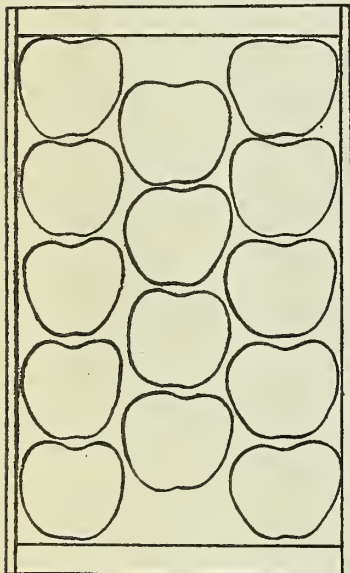


Figure 1—41 apples

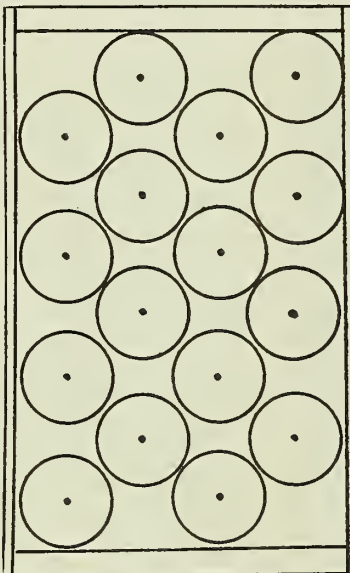


Figure 2—64 apples

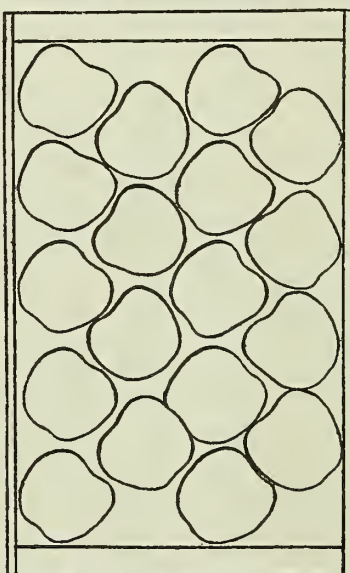


Figure 3—72 apples

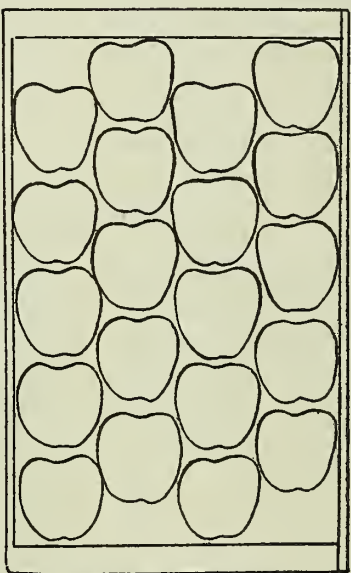


Figure 4—80 apples

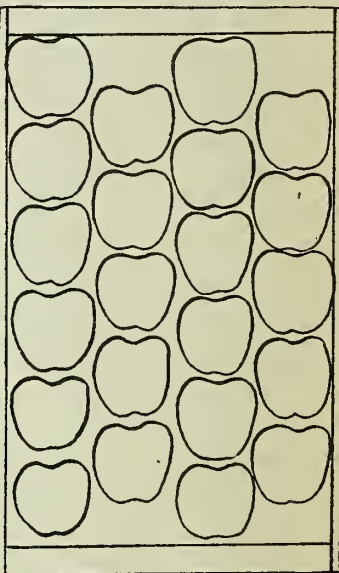


Figure 5—88 apples

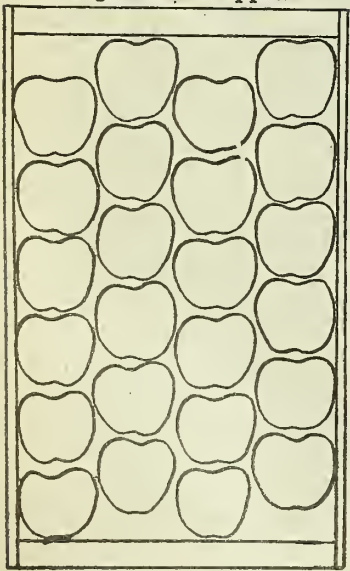


Figure 6—96 apples

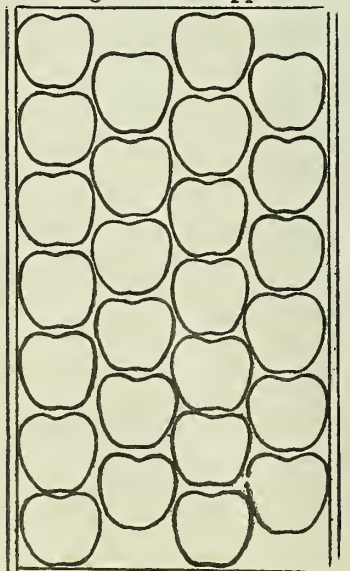


Figure 7—104 apples

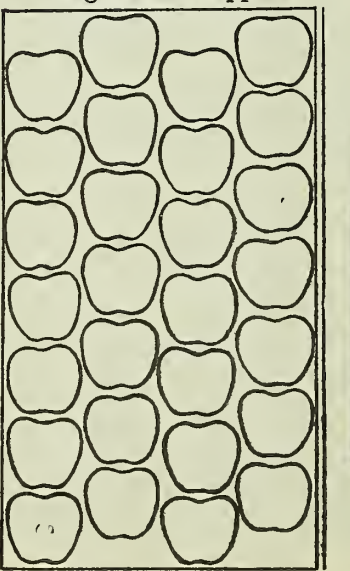


Figure 8—112 apples

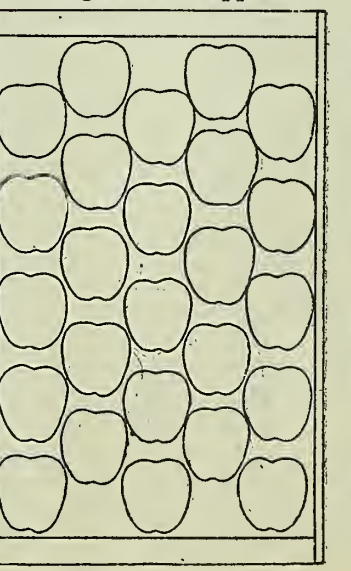


Figure 9—125 apples

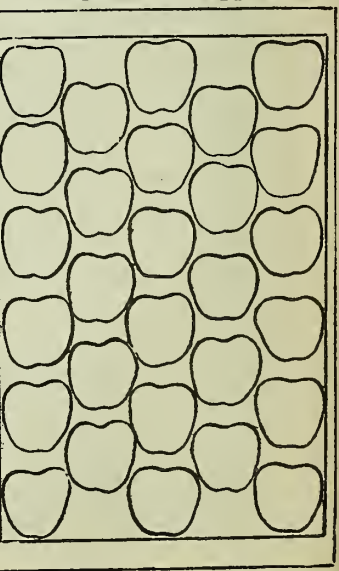


Figure 10—138 apples

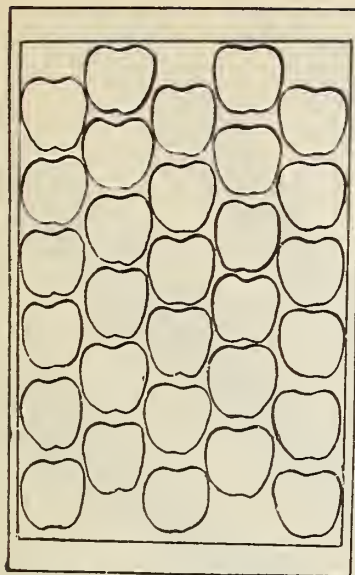


Figure 11—150 apples

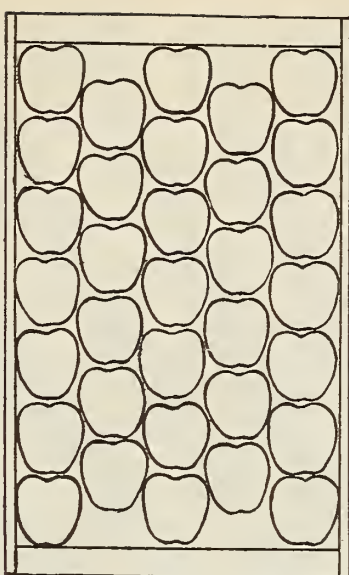


Figure 12—163 apples

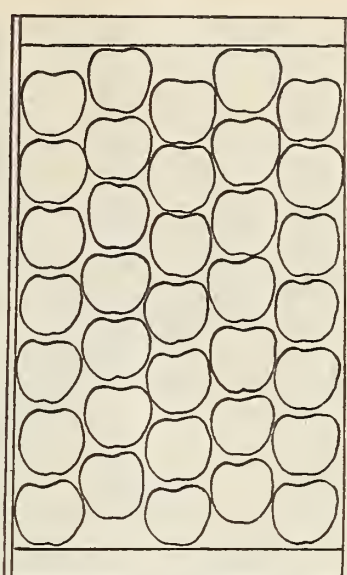


Figure 13—175 apples

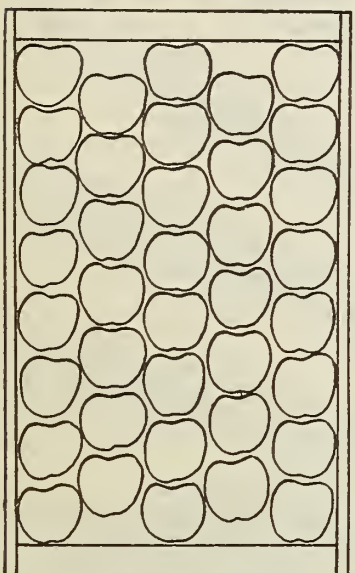


Figure 14—188 apples

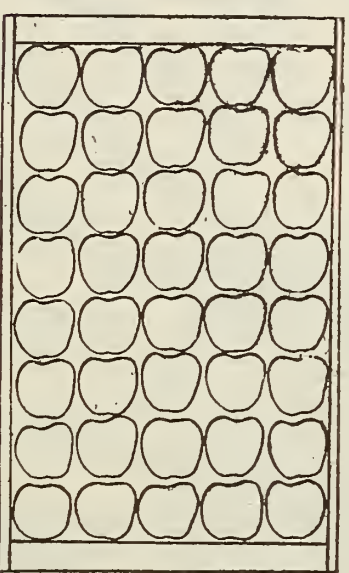


Figure 15—200 apples

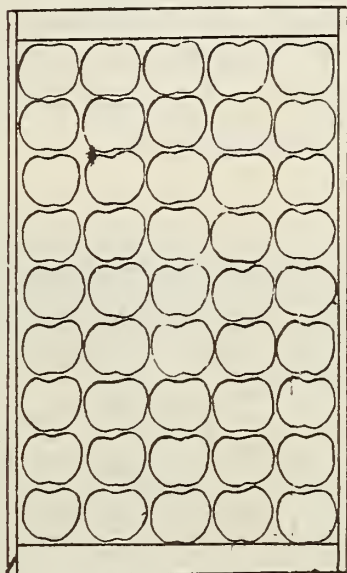


Figure 16—225 apples

Apple Grading Rules—Season 1920

Extra Fancy—Extra Fancy apples are defined as sound, mature, clean, hand-picked, well-formed apples only, free from all insect pests, diseases, blemishes, bruises and holes, spray burns, limb rub, visible watercore, skin punctures or skin broken at stem, but slight russetting within the basin of the stem shall be permitted.

Fancy Grade—Fancy apples are defined as apples complying with the standard of Extra Fancy Grade, except that slight leaf rubs, scratches, or russetting shall be permitted up to a total of ten per cent of the surface, and provided that scab spots not larger than one-quarter inch in diameter in the aggregate shall be permitted in this grade.

"C" Grade—"C" grade apples shall consist of sound, mature, hand-picked apples which are practically free from infection, bruising or broken skin and which are not badly misshapen, provided that two healed worm stings, slight sun scald, and scab up to a total of one-half inch in diameter shall be permitted in this grade.

Combination Grade—When Extra Fancy and Fancy apples are packed together the boxes must be marked "Combination Extra Fancy and Fancy." When Fancy and "C" grade apples are packed together the box must be marked "Combination Fancy and "C" Grades." Combination grades must contain at least 25 per cent of apples which are of such grade as would be permitted in the higher grades. None of the higher grade apples shall be sorted out of any lot and the remainder packed as combination grade.

Orchard Run—When Extra Fancy, Fancy and "C" Grade apples are packed together the boxes must be marked "Orchard Run," but Orchard Run apples must not contain any fruit that will not meet the requirements of "C" Grade. It shall be unlawful to remove any of the higher grade apples from any lot and then pack the remainder as "Orchard Run."

Unclassified—All firm apples which are practically free from infection but which do not conform to the foregoing specifications of grade, or if conforming, are not branded in accordance therewith shall be classed as "Unclassified," and so branded, provided, that no restriction shall be placed on the number of worm stings admitted to this class. Open

worm holes will not be permitted. This grade must be plainly marked with the word "Unclassified."

COLOR REQUIREMENTS

Apples shall be admitted to the First and Second grades, subject to the following color specifications. The percentage stated refers to the area of the surface which must be covered with a good shade of red.

SOLID RED VARIETIES

	Extra	Fancy
Aiken Red	75%	25%
Arkansas Black	75%	25%
Baldwin	75%	25%
Black Ben Davis	75%	25%
Detroit Red	75%	25%
Gano	75%	25%
King David	75%	25%
Red June	75%	25%
Spitzenburg Esopus	75%	25%
Spitzenburg Kaign	75%	25%
Vanderpool	75%	25%
Winesap	75%	25%
Jonathan	66⅔%	25%
McIntosh Red	66⅔%	25%

STRIPED OR PARTIAL RED VARIETIES

	Extra	Fancy
Delicious	66⅔%	25%
Stayman Winesap	66⅔%	25%
Black Twig	50%	15%
Ben Davis	50%	15%
Bonum	50%	15%
Fameuse	50%	15%
Geniton	50%	15%
Hubbardston	50%	15%
Limbertwig	50%	15%
Missouri Pippin	50%	15%
Northern Spy	50%	15%
Ontario	50%	15%
Red Astrachan	50%	15%
Rainier	50%	15%
Rome Beauty	*50%	15%
Salome	50%	15%
Stark	50%	15%
Sutton	50%	15%
Willow Twig	50%	15%
Wagener	50%	15%
Wealthy	50%	15%
York Imperial	50%	15%
Alexander	25%	10%

Chenango	25%	10%
Gravenstein	25%	10%
Jeffries	25%	10%
King	25%	10%
Oldenburg	25%	10%
Shiawassee	25%	10%
Twenty Ounce	25%	10%

* No color requirement on Fancy Rome Beauty 96 and larger.

RED CHEEKED OR BLUSHED VARIETIES

Extra Fancy—Perceptibly blushed cheek.

Fancy—Tinge of color.

Hydes King
Maiden Blush
Red Cheek Pippin
Winter Banana.

GREEN AND YELLOW VARIETIES

Extra Fancy—Characteristic color.

Fancy—Characteristic color.

Grimes Golden
Yellow Newtown
White Winter Pearmain
Cox's Orange Pippin
Ortley
Yellow Bellefleur
Rhode Island Greening.

SUMMER AND EARLY FALL VARIETIES

Summer varieties such as Astrachan, Bailey's Sweet, Beitigheimer, Duchess, Early Harvest, Red June, Strawberry, Twenty Ounce Pippin, Yellow Transparent and kindred varieties, not otherwise specified in these grading rules, together with early fall varieties such as Alexander, Blue Pearmain, Wolf River, Spokane Beauty, Fall Pippin, Waxen, Tolman Sweet, Sweet Bough and other varieties not provided for in these grading rules, as grown in sections of early maturity, shall be packed in accordance with the grading rules covering Fancy Grade as to defects but regardless of color.

All apples packed otherwise than according to the foregoing rules shall be accompanied by a printed description of the contents of each package.

APPLE PACKS

No. in Box

Style of Pack:	No. in Box
2x1 diagonal pack 5x5 long, 3 tier deep..	45
2x1 diagonal pack 5x6 long, 3 tier deep..	50
2x2 diagonal pack 3x3 long, 4 tier deep..	48
2x2 diagonal pack 3x4 long, 4 tier deep..	56
2x2 diagonal pack 4x4 long, 4 tier deep..	64
2x2 diagonal pack 4x5 long, 4 tier deep..	72
2x2 diagonal pack 5x5 long, 4 tier deep..	80
2x2 diagonal pack 5x6 long, 4 tier deep..	88
2x2 diagonal pack 6x6 long, 4 tier deep..	96
2x2 diagonal pack 6x7 long, 4 tier deep..	104
2x2 diagonal pack 7x7 long, 4 tier deep..	112
2x2 diagonal pack 7x8 long, 4 tier deep..	120
3x2 diagonal pack 4x5 long, 5 tier deep..	113
3x2 diagonal pack 5x5 long, 5 tier deep..	125
3x2 diagonal pack 5x6 long, 5 tier deep..	138
3x2 diagonal pack 6x6 long, 5 tier deep..	150
3x2 diagonal pack 6x7 long, 5 tier deep..	163
3x2 diagonal pack 7x7 long, 5 tier deep..	175
3x2 diagonal pack 7x8 long, 5 tier deep..	188
3x2 diagonal pack 8x8 long, 5 tier deep..	200
3x2 diagonal pack 8x9 long, 5 tier deep..	213
5 straight pack 8 long, 5 tier deep..	200
5 straight pack 9 long, 5 tier deep..	225

DIMENSIONS OF STANDARD APPLE AND PEAR PACKAGES

The standard size of an apple box shall be 18 inches long, 11½ inches wide, 10½ inches deep, inside measurement.

Pear—18x11½x8½ inches, and outside length 19¼ inches.

3½-inch suitcase pack Peach-Plum—18x11½x3½ inches.

DIMENSIONS OF APPLE BOX MATERIALS

Ends—¾x10½x11½, 2 pieces, 20 to bundle.
Sides—¾x10½x19¼, 2 pieces, 40 to bundle.
Top and Bottom—¼x5½x19¼, 4 pieces, 100 to bundle.

Cleats—¾x¾x11½, 4 pieces, 100 to bundle.
Thirty-two 6d nails commonly used per box.

RULES FOR ESTIMATING PAPER AND CARDBOARD

Apples and Pears.

Wraps for packing 100 boxes, 50 pounds.
Lining for packing 100 boxes, 7½ pounds.
Cardboard for packing 100 boxes (apples), 16 pounds.

RULES FOR USE OF PAPER

Apples.

Use 8x8 for 188-200-213-225 Packs.
Use 9x9 for 175-163-150-138-125-113 Packs.
Use 10x10 for 112-104-100-96-88 Packs.
Use 11x11 for 80-72-64-56 Packs.
Use 12x12 for 50-48-41-36-32 Packs.

Pears.

Use 8x8 for 210-228-245 Packs.
Use 9x9 for 193-180-165 Packs.
Use 10x10 for 150-135-120-110-100 Packs.
Use 11x11 for 90-80-70-60 Packs.

CEMENT COATED NAILS

Per keg: 4d, 55,000; 5d, 39,700; 5½d, 31,000; 6d, 23,600.

Utilizing Baskets for Apple Shipments

THE shortage and high prices of boxes as containers for packing apples during the past two years has caused growers in some sections of the Northwest to utilize some other style of package. One of the methods resorted to which is said to have proved satisfactory is the use of baskets. While baskets have been employed in shipping peaches from some of the Western states for some time it is only comparatively recently that they have been used for apples in the Northwest.

In using baskets for shipping apples Idaho has taken the lead and last year shipped a large quantity of fruit in this way. This year with a still greater shortage of containers and higher prices for boxes it is expected that a wider use of baskets will result and that other states are likely to use large quantities of them. Last year eight carloads of fancy apples were

shipped in baskets from the Payette valley, which growers had no trouble in disposing of at satisfactory prices. Thirty cars were shipped from the Boise valley and 15 acres of 6,000 empty baskets to the car were utilized at Parma, Council, Twin Falls and other points in Idaho.

By properly piling the baskets five tier high it is said to be possible to ship 600 packed baskets of apples to the car. In some instances the grading and packing of the apples was done in the orchards doing away with the expense of hauling and handling in the packing house.

While packing apples in baskets in Oregon and Washington has been very limited so far, reports from the latter state are to the effect that they will probably be used to some extent there this year. In fact there has been a considerable tendency among growers

in some of the states to try shipping some of their apples in bulk due to the shortage of containers. In view of this, baskets which can be obtained for about the same price as boxes this year may prove a big help in moving the Northwest apple crop.



Jonathan apples packed in bushel baskets ready for shipment at Fruitland, Idaho.

Your Apples Won't Freeze

NEITHER WILL YOUR OTHER FRUIT OR POTATOES

IF YOU USE

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The Most Efficient Insulator, as Proved by the Tests of the United States Government Bureau of Standards

(Ask for copy of report of test)

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Cabot's Quilt is a thick, resilient matting of cured eel-grass quilted between sheets of wonderfully strong Kraft paper. The eel-grass has a tough, flat fibre that forms thousands of dead-air spaces, making an insulating layer that the tests proved was superior even to cork board, which now costs over five times as much.

For further information and details of proper construction write or see

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Operating Air-Cooled Apple Storage Houses

By H. J. Ramsey and S. J. Dennis, of the U. S. Department of Agriculture

PROPERLY grown, matured, and handled fruit can not be held in good condition for the maximum length of time in storage unless it is cooled with some degree of promptness. Neither can it be stored for the maximum length of time unless it is held under favorable storage temperatures and conditions. The two factors of promptness of cooling and the maintenance of proper storage temperatures are inseparably associated with both the construction and the management of air-cooled storage houses. These are the two factors for which the manager of the storage

house is primarily responsible. If the grower is also the manager of his own common storage house, full responsibility for the condition of the fruit in storage must necessarily devolve on him. If, however, the common storage house is managed by an association or by some one other than the grower, the responsibility for the keeping quality rests both with the grower and the storage-house manager. When the apples are grown, harvested, and stored by a single individual, there is no question as to who is responsible for every act that tends to prolong or shorten the life of

the fruit. If, however, there is a division of labor, one man growing and harvesting and another storing the fruit, then there is always a question as to what may have caused the loss in storage and who was responsible for it.

Inefficient management of storage houses results usually in the very slow cooling of the fruit and the maintenance of temperatures anything but desirable. All the money invested in the orchard enterprise and all the care exercised in growing and harvesting the crop may be wholly wasted by inattention to the details of proper storage-house management. It is therefore evident that if air-cooled storage houses are to be successfully employed it is essential that proper attention be given to both construction and management, in order to preserve the keeping quality that the fruit possesses at the time it is placed in storage.

The efficiency of a common storage house will depend primarily upon the rapidity with which the fruit is cooled and the storage temperatures maintained. A common storage building, therefore, must necessarily provide for two things—the freest circulation and intake of cold air during the night or the cooler periods of the day and the conservation of this cold air by closing all hatches and intakes before the outside temperature begins to rise and by preventing the leakage of heat through the walls, floors, and ceilings of the building. For the intake of cold air, openings should be provided at or near the ground or the lower part of the building, while air shafts leading upward from the ceiling of the storage chamber or chambers should be provided to carry off the warm air. To prevent the leakage of heat into the building, the walls, ceilings, and floors must be insulated. As these two factors govern to a considerable extent the rapidity of cooling and the maintenance of low temperatures, the importance of ventilation and insulation can hardly be overestimated. No other two factors of construction or operation are of greater importance. Upon these depend in the final analysis the success or failure of the common storage house.

The circulation of air in a common storage house is usually secured through natural ventilation induced by the difference in the weight of air at different temperatures. Air when warm expands and occupies a greater amount of space than when cold. The weight of a cubic foot of warm air is less than the weight of a cubic foot of cold air. When the air inside of the building is warmer than that outside, the cold outside air, by reason of its greater weight, flows in through the openings at the lower part of the building. This incoming colder air pushes out the warmer and lighter air

Continued on page 32.

[This is one of a series]

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They are practical details of manufacture and technique.

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For President
Warren G. Harding

For Vice-President
Calvin Coolidge



The Republican Party and the Farmer

YOU farmers of America have more at stake in this election than any other element in our citizenship.

You have borne more than your full share of the burdens of public waste, extravagance and mismanagement.

You want a **change**.

You want this change at Washington because the present national administration has singled out yours, the biggest of all national industries, as a target for a price fixing policy which has limited the return for your output, while leaving you exposed to the exactions of profiteers in every other line of production, distribution and speculation.

You Have Been the Victim

You have been told what you could charge for your staple products, you have been subjected to all sorts of restraints, exactions and annoyances, while there has been no limit to what others might charge you for food, clothing, machinery and other necessities of your occupation.

The result of this unwise, unsympathetic policy, while harmful to the farm producer, has not been helpful to the consumer. Production has been curtailed, speculation in food has been facilitated, and that expansion of the great farming industry essential to America's future has been halted.

Make the Farm More Profitable

The Republican party by its platform and the utterances of its candidates, is pledged to a sympathetic, practical, helpful attitude toward American agriculture. It promises a constructive program which will make the farm more profitable and therefore more productive.

The Republican party is not a class or sectional party; its policies are intended for the upbuilding of the whole nation. But it believes that it is essential to the general welfare that the American farmer, whose industry is the base of our national prosperity, should be stimulated to larger production

through an assurance to him of a larger share of the values which his own labor and enterprise create.

The Democratic platform reaffirms the tariff-for-revenue-only policy which will open the American market to the invasion of cheap farm products of foreign lands (the resultant of cheap labor) when shipping becomes available. It promises no relief from the price fixing and other farm policies of this administration, or remedy for the violent fluctuations in farm product prices which have caused the farmer such heavy losses.

Pledges of the Party

Here is what the Republican platform and the country-bred candidate say on the issues of special interest to the farmer:

Practical and adequate farm representation in the appointment of governmental officials and commissions.

The right to form co-operative associations for marketing their products, and protection against discrimination.

The scientific study of agricultural prices and farm production costs at home and abroad, with a view to reducing the frequency of abnormal fluctuations, and the uncensored publication of such reports.

The authorization of associations for the extension of personal credit.

A national inquiry on the co-ordination of rail, water and motor transportation, with adequate facilities for receiving, handling and marketing food.

The encouragement of our export trade.

An end to unnecessary price fixing and ill-considered efforts arbitrarily to reduce prices of farm products, which invariably result to the disadvantage both of producer and consumer.

The encouragement of the production and importation of fertilizing material and for its extended use.

The extension of the federal farm loan act so as to help farmers to become farm owners

and thus reduce the evils of farm tenantry, and also to furnish such long-time credit as farmers need to finance adequately their larger and long-time production operations.

Revision of the tariff as necessary for the preservation of a home market for American labor, agriculture and industries. (Note that the pledge to the farmer is just as specific as to labor and capital.)

Harding's Endorsement

Senator Warren G. Harding, the Republican nominee, in his speech of acceptance took advanced ground on behalf of agriculture. He said:

"I hold that farmers should not only be permitted but encouraged to join in co-operative associations to reap the just measure of reward merited by their arduous toil."

"Our platform is an earnest pledge of renewed concern for agriculture, and we pledge effective expression in law and practice. We will hail that co-operation which will make profitable and desirable the ownership and operation of small farms and which will facilitate the marketing of farm products without the lamentable waste which exists under present conditions.

"A Republican administration will be committed to a renewed regard for agriculture and seek the participation of farmers in curing the ills justly complained of and aim to place the American farm where it ought to be—highly ranked in American activities and fully sharing the highest good fortune of American life.

"Becoming associated with this subject are the policies of irrigation and reclamation, so essential to agricultural expansion, and the continued development of the great and wonderful west."

Mr. Harding pledges federal co-operation with state governments in building and improving farms-to-market roads rather than national highways, to cheapen and facilitate the quick shipment of crops.

Send for a free copy of Senator Harding's address in which he discusses at length present day problems of the farmer.

REPUBLICAN NATIONAL COMMITTEE, Auditorium Hotel, Chicago.

WHEN WRITING ADVERTISERS MENTION BETTER FRUIT

BETTER FRUIT

An Illustrated Magazine Devoted to the Interests
of Modern Fruit Growing and Marketing.

Published Monthly
by

Better Fruit Publishing Company

703 Oregonian Building
PORTLAND, OREGON

Delayed Apple Buying.

It is now evident that speculation in the 1920 apple crop will be reduced to the minimum as buyers who last year bought large blocks of apples early in the season are holding off until the market is more fully developed. In fact, apple sales up to September 1st have been fewer than in almost any years that men in the trade can remember. This does not necessarily mean a poor year for the grower, but it does mean that the apple movement to the big markets will be considerably slower this year than last and that the grower and shipper must take every precaution to store and care for their holdings. The delay in apple buying is undoubtedly due to some extent to uncertain financial conditions in regard to the movement of almost all farm crops. These conditions will no doubt adjust themselves a little later in the season.

As to the size of the crop, although larger than last year by 15 to 20 per cent, it is not by any means of the bumper proportions of a number of years in the past. There should, therefore, be a good market at satisfactory prices for the crop—particularly the Northwest output, which is far below normal in size, but of fine quality.

Soft Fruit Crop

Generally speaking, the 1920 berry and cherry crop has been marketed at very satisfactory figures to the grower this year. Prices for all kinds of soft fruits have been the highest ever known in the Northwest, and, despite the high cost of labor or materials necessary to the soft fruit industry, growers, almost without exception, have had a most profitable season. In some instances there is a tendency to be skeptical as to whether the establishments who bought the soft fruit crops can turn them at a living profit. Of course this does not worry the grower, except that if prices for the finished product fall down in one year, prices must naturally be lower the next. It is to be assumed, however, that most of the buyers of soft fruits had estimated the quantity they could sell at the prices paid and were taking no chances. In fact in some lines of processed fruits, manufacturers are said to have sold more stock than they could obtain. In others, the prices of fruit were so high that it was almost prohibitive and the output was necessarily limited. In viewing the whole situation canners are inclined to be optimistic in regard to

marketing the season's crop of soft fruits at the increased prices. It is believed, however, that the top notch was reached this year in prices for soft fruit canning stock.

Shipping in Bulk.

The apple packing season is again with us, bringing with it, according to reports from all sections of the country, a distinct shortage of containers. In the East, barrels are high and difficult to get, and in the Northwest the same conditions obtain in regard to boxes. This has led to a great deal of talk about shipping in bulk, and it is probable that a considerable shipment of Northwest apples will be made from some sections in the latter region to points in the Middle West unpacked. These shipments, however, must of necessity be limited as the large Eastern buyers of Northwest apples, buy them on account of the attractiveness of the box package as well as their quality. If they want bulk apples, they can buy them much nearer home. If the box shortage becomes very acute, it may result, in some sections, in the packing of the extra fancy and fancy grades in boxes and in shipping the "C" grade in some other way.

The grower, however, who can obtain boxes should not be tempted to experiment in shipping his apples, even at the high cost of containers. The reputation of the Northwest apple has been built up and is being maintained on its extra high quality pack and a deviation from this course cannot help but prove disastrous.

Marking Fruit Packages.

Fruits and vegetables in package form when shipped into interstate commerce should bear a plain and conspicuous statement of the quantity of the contents in each package, according to a statement made by officials of the Bureau of Chemistry, United States Department of Agriculture, who are charged with the enforcement of the Federal food and drugs act. Instructions have been issued showing how various fruits and vegetables in different styles of packages may be marked in order to comply fully with the net weight amendment to the law, and also showing what shipments of vegetables as ordinarily marketed are exempt from the net weight provisions.

Combatting Fire Blight.

Do not forget that fire blight is one of the most serious diseases in an orchard and that when discovered should be cut out at once. This disease shows itself in the fruit spurs and twigs first, which exhibit a cankerous condition. In removing fire blight the cuts should be made 10 to 12 inches below the infected part. The wounds should be disinfected with one grain of cyanide of mercury and one gram of bichloride of mercury to 500cc of water. This com-

bination is an effective disinfectant for both wounds and tools, according to Prof. F. C. Reimer. Frequent inspection in districts where this disease has been discovered is necessary and growers should use extraordinary vigilance in combatting this disease.

What the Newspapers Interested in Fruit Are Saying

The removal of price control of apples from August 1 to the middle of November by the British Government recalls the remark of the embarrassed dinner guest that the butter was very good, what there was of it, and that there was enough of it, too, such as it was.—Fruit Trade Journal.

We hear that very extensive orders have been placed for small motor machinery for working citrus farms and sugar plantations in Natal and the Eastern Transvaal. There is no doubt that South Africa is certainly behind in its application of motive power to land-working.

A combined tool which ploughs or cultivates, or converts itself into a stationary engine at will and is always ready to work must "stand in" as a thing the working farmer can't afford to be without. Elsewhere, scarcity and dearth of labor has forced the use of these implements to the front and they certainly cut work. We are not in the dire need of other countries so far as labor goes, but we are in competition with their products, and if they can "do it cheaper" by applying new methods we have got to apply them, too.—South African Fruitgrower.

The California Associated Raisin Company on August 9th named its opening prices for 1920 crop of raisins on a basis of 15c per pound to the grower. This is an increase of five cents per pound over last year's prices. With an increase in the yield this year, raisin growers will receive approximately \$22,000,000 more for this year's crop than they were paid last year.

The estimated tonnage of the 1920 California raisin crop is 200,000,000 tons in comparison with a total tonnage of about 190,000,000 tons produced last year. The price the trade will pay for this year's raisin crop will be approximately \$80,000,000, of which the California raisin growers will receive about \$60,000,000.—Sunsweet Standard.

The amount of effort it has taken to bring to the attention of people of the valley the menace confronting them in the lack of refrigerator cars for this year is almost unbelievable. When the facts are presented as clearly as they have been in this case it would seem that people would flock to the cause and thereby prevent, if possible, a serious loss. But the general inclination seems to be to let George do it, or an implicit confidence that the thing will come out all right. The growth of that idea would ultimately tear down every improvement that has been made with such great effort in the Yakima Valley. It will spell defeat in any cause just as surely as the defensive game played by the Germans was disastrous before aggressive forces. Those few individuals who responded to the first call for ammunition in the refrigerator car campaign are in a class with the Belgians who stemmed the gray tide in a critical moment. The present situation demands immediate action of the most aggressive character if the valley is not to feel the pinch of congested transportation when shipping time comes.—Yakima Valley Progress.

How You Can Get Better Fruit's Apple Packing Chart

BETTER FRUIT's apple packing chart as it appears in this number, but printed on cardboard so that it can be hung in the packing house, will be mailed to anyone desiring it on the following terms:

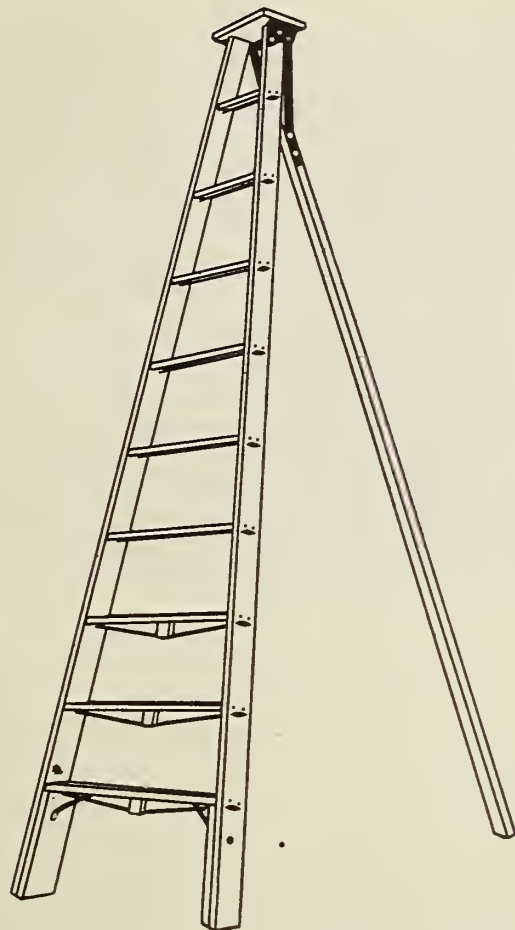
One card FREE with a new subscription to BETTER FRUIT.

One card without subscription..... 10c
Twelve cards without subscription...\$1.00

For quantity prices write us.

BETTER FRUIT PUBLISHING CO.
703 Oregonian Building
Portland, Oregon

The Northwest's Orchard Supplies



The Northwest Standard

The ladder chosen by orchardists throughout the United States, because it is light and well constructed.



Eagle Brand Ladder

A handy ladder where limbs are close together; easily put into tree without bruising the limbs.



Bastian Straight Pruner

Why waste your time with an old-style pruner, when you can use the Bastian and prune your trees with ease in one-half the time?

Sold for less money than any other pruner on the market, considering quality and workmanship.



Barnett Picking Pails

No bruised fruit when you use the Canvas Bottom Pail with sides lined. The most modern device for picking fruit. Cost is small.

All Northwest Ladders are made of clear spruce and well ironed, with rod under each step. Ask your dealer for the genuine "Northwest." Our name on each ladder. If he cannot supply you, write us direct.

Sectional Pruner

Bastian Sectional Take-down Pruners, three pruners in one, 6-9-12 feet. A few minutes will change from short to long or to medium. One Sectional will do the work for a fair sized orchard.

Put up in 42-inch length cartons. Can be mailed by parcel post.



Northwest Fence and Wire Works

PORTLAND, OREGON

Service Rendered by Our Fertilizer and Stock Food Factories

By W. R. Lebo, Secretary Marine Products Co., Inc., Tacoma, Washington

The functions of our factories are many. They serve as storage and collection depots for ammoniates, phosphates, potash, guanos and animal and other by-products, brought together from all points of the compass. The materials brought together under a common roof are stored, ground, mixed, screened and handled with specially designed labor saving machinery. Without this treatment many of these ingredients would be a total loss to agriculture.

CHEMICAL CONTROL

The men in charge of our plants are skilled in chemistry and engineering and they must necessarily have a definite knowledge of the chemical reactions that are constantly occurring throughout the entire processing. Ability to judge the chemical combinations in advance so that there are no false moves with resultant failures of manufactured goods is a further requisite. Goods for both fertilizer and stock feed are sampled, analyzed and classed safely. Balanced ration stock feed and formulas are calculated in advance and the combinations resultant must check to a nicety in order to comply with the State fertilizer and feeding laws which require guaranteed analysis.

CONSERVATION

Practical conservation of the highest order is the result of our routine control work and experimentation. The happy combination of technical and practical men in our personnel has saved, and is saving thousands of tons of fish offal in Alaska, packing house offal and other by-products in the Northwest, to be further used in the conservation of the land. One acre well fertilized is often worth two acres unfertilized in actual production. Poultry and live stock when fed a balanced ration combining protein from an animal organic source, phosphates from bone, with a grain ration, show increased production and lower feeding costs.

FIELD WORK

Close observation of the crops grown in California, Oregon and Washington, by trained men who cover every district several times yearly, make it possible for us to carry on the most thorough investigation of fertilizers and their results. Extensive experiments are being carried on in a practical way throughout the Pacific Northwest. The West Side Gardens located near Tacoma, use approximately \$15,000.00 per year of our special formulas on their two hundred odd acre farm, where we have carried on the most exhaustive practical research work ever attempted on the Pacific Coast.

"Puyallup Brand" Berry Fertilizer

"TWO - TEN - TWO"

A concentrated balanced ration berry producing fertilizer, especially designed to meet the needs of berry production in the wet climate of the Pacific Northwest. Constant experiments and close contact with the growers have made "Puyallup Brand" berry fertilizer possible. The theory of this fertilizer is, that it is based on largely organic materials, which



FERTILIZED WITH CHICKEN MANURE

The upper view shows raspberries fertilized with chicken manure. No "Puyallup Brand" fertilizer used. The owner, Mr. Stevenson, at Puyallup, will fertilize with "Puyallup Brand" this year. This place adjoins the one shown below.

are timed to break down as the result of bacterial activity, exerting a continuity of fertilizer effort on the berry vines. The action of organic fertilizers in the soil is ideal from the standpoint of utility. Applying "Puyallup Brand" berry fertilizer will obtain for the grower, first an increase of organic matter content with its effect on water retaining capacity, improved mechanical condition, addition of bacteria, and increased bacterial activity. The bacteria attack particles of meat, blood and bone, thus transforming the nitrogen to ammonia, in which form nitrates are taken up by the roots, the form in which most of the nitrogen is absorbed.

In cold weather the bacteria are not active and at such time as the plant is not actively feeding, the plant food from organic material is not available and for this reason does not leach out of the soil. On the other hand inorganic materials, such as nitrate of soda, are soluble in any kind of weather and readily leach beyond the roots of the tree, oftentimes leaving behind an injurious residue harmful to the plant. By using a natural product, something once a part of a living organism, are allowing nature's forces to take care of the fertilizing in a natural way, you need never worry about what day you must fertilize to get the best results.

The New Growth Bears the Fruit

On blackberries and raspberries the suckers represent the new wood necessary for fruit production. They are essential, but if too many are produced they shade the fruit and make harvesting difficult. Here again new wood growth must be controlled. The runners represent the new wood of strawberries. Those produced by this year's mother plants are destined to bear the crop of next year. Here the fertility problem consists in getting a sufficient number of well rooted runners, but avoiding such an excessive number as to make them crowd each other and function as so many weeds.

PLANT FOOD CONTROLS WOOD GROWTH

The kind, form and amount of plant food available for the use of the plant control the wood growth.

Fertilizer Is A Chain

The three links may be termed Nitrogen, Phosphoric Acid and Potash. The limiting factor in the growth of a crop may be one element, any of the three. The plant food ration is no stronger than its weakest link.

NITROGEN is the stem and leaf producer. It produces the green, rank growth of the plant and gives to foliage a healthy green color.

PHOSPHORIC ACID hastens the maturity and increases production of fruit.

POTASH strengthens the fiber of the wood growth and aids in producing healthy disease resistant plants and fruit, and above all produces hard shipping quality in the berry.

Note:—Where the grower is getting sufficient cane growth and wishes to increase shipping quality, we substitute a two-ten-four analysis, increasing the formula by 2 per cent. of potash to cover this condition.

PLANT FOOD MUST BE BALANCED

Sickly and weakened condition of growth indicates lack of nitrogen. But nitrogen unbalanced by the other food usually proves a very poor remedy. If the plant food ration is out of balance new wood delays in ripening, is subject to winter killing, and the excessive growth of leaves shades the fruit and leads to poor quality. Phosphoric acid and potash, in combination with nitrogen, remedies this condition. The best fertility practice is to use "Puyallup Brand" berry fertilizer which grows enough new wood for a full set of fruit, but which also helps to strengthen it, to prevent winter killing.

CLOVER IN THE BERRY FIELD

Cane berries will eventually be planted seven to eight feet apart in the rows and a legume grown through the center. This will be disked in to allow of ready access between the rows. The actual cane row may be clean cultivated. In this manner much of the nitrogen required can be secured by the legume which will also furnish organic matter and a special phosphoric acid and potash fertilizer



FERTILIZED WITH "PUYALLUP BRAND"

G. Hamainshi place adjoins the berry patch in upper picture. Our Major Newsom is over six feet tall and his position illustrates the splendid growth received as a result of "Puyallup Brand" berry fertilizer which was applied in the fall.

may be obtained from the manufacturer of fertilizers to supply the fruit's demands.

DIRECTIONS

Small fruit require from 1000 lbs. to 2000 lbs. of "Puyallup Brand" fertilizer applied to each acre yearly, in order to produce heavy yield crops, year after year.

METHOD OF APPLICATION

The best method is to make two applications; one-half in the Fall and one-half in the Spring. Good results have been shown by fertilizing in a circle around the upper root system, starting 8 inches or 10 inches from the stalk of the vine. Where proper cultivation is carried on, broadcasting between the rows places the plant food where it is ultimately available. There is no danger to working "Puyallup Brand" fertilizer around the roots of berry fruits.

SPRING FERTILIZATION

At this season of the year there is a current of life that pulsates throughout the whole animal and vegetable kingdoms. "Spring's Impulse" it is sometimes called, and who can deny its influence? Do not wait to respond to the call of your fruit vines until the buds are bursting and the new leaves are evidence that "Spring has come." This period is too late for the best results for fertilizer as the strongest impulse is past. Later efforts of fertilization are never as efficient.

The soil is nature's factory and must limit its output to the raw material on hand. If the plant food is not ready when needed you've lost part of the growth which your berry vines would have made. A successful farmer should look ahead as the successful manufacturer does and provide for the conditions which are going to exist. A supply of organic plant food should be at the demand of the searching new rootlets which put forth in every direction. "Puyallup Brand" supplies the demand for material to produce growth of foliage and new wood, as well as the much desired heavy bloom.

SUMMER FERTILIZER

Summer fertilizing is often resorted to, to provide a sustaining power to develop growth properly and to hold and mature the young fruit. Laying the foundation for the next year's crop depends as surely upon sufficient food as its quality depends upon the source of its food. At this period we supply special mixtures low in nitrogen and high in potash to give firmness and shipping qualities to the berry. This treatment adds materially to weight and solidity.

FALL FERTILIZING

Berry trees and vines in the main should be fertilized in the Fall. Our "Puyallup Brand" berry fertilizer is manufactured from slowly available organic materials for this season. The fertility elements contained in this application are gradually taken up and assimilated by the roots during the late Fall and Winter, thus establishing full vigor. This Fall storage of plant food assists in avoiding loss by frost because of the increased vigor and ability to withstand its inroads. Capacity of strawberry and berry vines means chiefly bearing surface, other conditions being normal. Applications of "Puyallup Brand" fertilizer in the Fall have proven that big capacity bearing surface is the result.

Anthracnose on Berries.

To prevent anthracnose in loganberries or blackberries remove all the old canes as soon as the harvest is complete and burn them. This is a safer plan than cutting the canes up and plowing them under. Next spring spray the plants just before the blossoms open and again two weeks after the blossoming period, using Bordeaux mixture 2-3-50.

Early Picked Pears.

Early picked pears are decidedly inferior in quality to those harvested later, says the O. A. C. Experiment Station. Pears picked from the middle to the end of the season likewise keep slightly longer in cold storage than the early picked fruit. Growers can get the pear harvesting and storage bulletin by writing to the college at Corvallis.

Warning

The success of Marine Products Company's "Puyallup Brand" berry fertilizer has caused several companies to duplicate the chemical analysis, two-ten-two, and their salesmen make the statement "as good as Marine Products Company's berry fertilizer and costs you less money."

Remember there are two points of view in fertilizing:

- 1st To start the vine.
- 2nd To nourish it to fruition.

Our fertilizer represents a continuity of plant food energy; the organic materials are combined to break down during the entire growing and fruition period, and the constituent elements knit with the soil in a natural way. By substituting chemicals and organic materials not readily available, our superior facilities and greater buying and distributing power, would allow us to make a cut price fertilizer cheaper than any produced in the Northwest.

CHEMICAL ANALYSIS

We guarantee analysis but a stress should be laid not upon *analysis* and *valuations* so much as upon the *intrinsic* and *agricultural* values. Bear in mind that a manufacturer looking more to profits than to their reputation, may use materials which produce high chemical valuations at a low expense, yet in so doing he may rob the fertilizer of its *agricultural value* simply to obtain a *commercial* value. When an Agriculturalist says one analysis is as good as another, remember he speaks only from the more or less limited experience which he may have gained in a community where some Agricultural Experiment Stations still recommend playing with the crop, feeding it first one thing and then another. The crop

Commercial Manures

	Phos.			
	Nit.	A.	Potash	
Berries....	2	10	2	"Puyallup" Brand
Large Fruit	6	10	4	"Clarke's Wenatchee" Orchard Dressing
		1	8	10 "Harris" Special (Hood River)
Potatoes...	2	10	4	"Potato" Special
Tomatoes..	3	8	6	"Tomato" Special
Vegetables.	2	10	2	"Lebo's" General
Hops.....	6	8	4	(Muehler's Hop)
Lawns				Tankage, Fish Meals
Miscellaneous				Marproco Brands
Sea Products				Fish Meal, Whale Meal, Kelp Potash, Whale Bone

Potash, Nitrate, Blood, Bone, Superphosphate

TANKAGE

Carlot Shippers Aquatic and Packing House
By-products for Feed and Fertilizer

Marine Products Company
TACOMA, U. S. A.

requires a complete balanced ration plant food just as live stock requires such a ration. Our fertilizers are built on the basis of natural crop requirements.

"PROOF OF THE PUDDING"

The "proof of the pudding is in the eating thereof." Our efforts are rewarded by the hundreds of testimonials, some of them contained herein.

Salem, Oregon, July 28, 1920.

Marine Products Co.

I used your fertilizer this Spring on one acre of loganberries and am securing great results; in fact, far better than I anticipated. Am getting three times as many berries as my neighbor adjoining. Am well pleased with the fertilizer.

John D. Campbell.

Salem, Oregon, July 27, 1920.

I used Marine Products Co.'s "Puyallup Brand" fertilizer on loganberries this year and have got an excellent cane growth from its use. Also an increased production of berries.

R. M. Cammack.

Hubbard, Oregon, July 28, 1920.

I used Marine Products Co.'s "Puyallup Brand" fertilizer on six rows of my loganberries. These rows were on my poorest ground, but I obtained twice the yield on these rows that I did on the unfertilized rows. I am well pleased with the fertilizer.

H. W. Kunkle.

Route 1, Box 2, Puyallup, July 10, 1920.

This is to say that the past Spring I used the Marine Products Co. berry fertilizer on my raspberry patch. I am exceedingly well pleased with the results. The cane growth is fine, the berries are large and firm, and there is every indication of a fine crop. The patch was in a very run down condition when I applied the fertilizer.

Chas. Nolin.

Route 3, Box 172, Puyallup, Wash.

I have used the Marine Products Co. berry fertilizer on strawberries, blackberries and raspberries. The strawberries gave a 200 per cent. increase in yield. The blackberries have not yet come into bearing, but I have never seen finer cane growth and the blooms are profuse. They will yield a bumper crop. There is fully a 50 per cent. increase in the cane growth of the raspberries and while the yield has been cut down by the frost, nevertheless the good effects of the fertilizer can be clearly seen.

R. M. Campbell.

Route 3, Box 180, 21st St. N.W.,

Puyallup, July 19, 1920.

I think I have the finest berry patch in the Valley. The yield in berries of fine quality has been so heavy that I had to use the double wire system as trellis support. The new cane growth reaches up from ten to twelve feet. I think that to say there has been a sixty per cent. new cane growth above the old vines would be a conservative statement.

I used the Pu-L-Up berry fertilizer on my raspberries and reinforced the same with a small amount of chicken litter from the chicken house, composed mostly of straw. I also used the fertilizer on my rhubarb, with the result that the canning company paid me one cent more per pound on account of the extra quality.

I feel that the Marine Products Co. fertilizer, together with good tillage, has accomplished astonishing results. We have named our ranch "The Lucky Ten."

Mrs. Genevieve Ferguson.

The Value of An Apple

depends greatly on its appearance. When Nature has done her part, giving size, color and shape to your fruit, do not lessen your profit by use of imperfect picking devices, which may bruise or mar the fruit's appearance, when you can buy

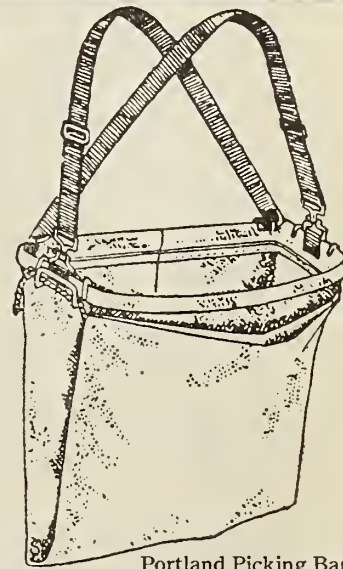
A Portland Picking Bag

Designed to afford safety to your fruit from tree to box.

Price, \$2.50 Each

THE HARDIE MFG. CO.

55 No. Front St., Portland, Ore. 222 Los Angeles St., Los Angeles, Cal.



Portland Picking Bag

Fairs—Their Value to the Community

COMMUNITY, county, state and interstate fairs are a big asset to both the business man and producer.

It follows that promoting some form of community fair, such as an exhibit of local products, is profitable from many points of view. It stimulates better production of stock, farm produce and garden truck. It engenders the community pride, and advertises in an attractive fashion good products and those who produced them.

Advertisers have discovered that good characteristics of their products which are so familiar to them as to seem commonplace are often not so well known to the great buying public. Goods must be talked about if business is to be secured. The same holds true with communities. The excellence of neighborhood products and the special lines in which various individuals excel may seem like a very old story to those immediately concerned, but there are plenty of folks near by who have not heard this story, or, by chance they have heard it, it is very much worth while from a business standpoint to repeat it—and more than once.

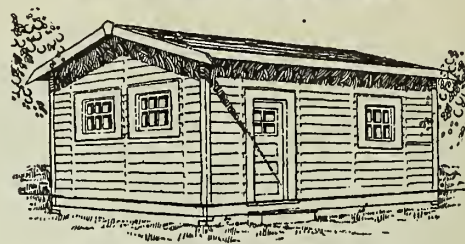
If the community decides to hold a fair, an organization should be formed, officers elected, and committees appointed. The latter should include committees on amusement and

entertainments, arrangements, decorations and publicity. These are general committees. In addition, there should be exhibit department committees for such exhibits as live stock, farm products, orchard and garden products, women's work and fine arts, school and club exhibits and historical relics.

Too much emphasis cannot be placed on properly advertising the fair through articles in the local papers, printed handbills, hand-made posters, notices read, preferably several times, in the schools and churches, and in various other ways. The publicity committee should give special attention to advertising in neighboring communities, extending an invitation in such cordial terms that many who do not ordinarily visit the community holding the exhibit will be induced to do so.

The exhibit should represent as nearly as possible the normal production of the community, for one of the purposes of such a fair is to stimulate interest in increasing the quantity and improving the quality of the average produce, as well as giving special recognition to the leaders in different lines. Freak exhibits are to be avoided. The committee should make it a point to solicit exhibits from all persons eligible, not failing to emphasize the business benefits which may result.

"Redimade" Portable Take-Apart House For Apple Pickers' Use



Price F. O. B. Portland **\$155.00**

Can be erected by two men in a day. Can be easily taken apart and stored away. Made in 4 ft. wide sections ready to bolt together. Best grade material, size 10x16 feet. Prices include matched sectional floor, three single sash windows and door, and prepared roofing, everything ready to put together and move in. Siding is best 1x6 rustic. Order as many houses as you need for your pickers.

Redimade Building Co.

801 Lewis Bldg., PORTLAND, OREGON

No Orchard or Farm is Complete
Without Our Latest Model

COMMERCIAL SIZE All Purpose Evaporator

Write for Folder

HOME EVAPORATOR CO.

ST. LOUIS, MISSOURI

P. O. Box 817

Central Station

Success Ewing Orchard Ladder

Scientific tests and calculations must enter into the design and construction of a perfect Orchard Ladder.

The weight and breaking strength of lumber, as well as its ability to stand exposure without checking and splitting, determines the kind of material to be used.

The constantly varying leverages and loads to which the ladder is subjected determines the design which should be used.

A ladder designed so as to combine maximum strength with minimum weight and long life is what has been produced in the SUCCESS LADDER.

It differs from other ladders in the following points:—

"A"—Lighter weight.

"B"—Greater strength.

"C"—Clear dry spruce lumber—the strongest wood for its weight that grows.

"D"—Special patented metal clips to hold steps, which are also fully rodded throughout.

"E"—For shipping or being stored can be completely folded into one-half the space occupied by other ladders.

"F"—No long, weak lower steps as in other ladders.

8 ft. ladder, 27 lbs. 10 ft. ladder, 31 lbs. 12 ft. ladder, 40 lbs.

14 ft. ladder, 44 lbs. 16 ft. ladder, 53 lbs.

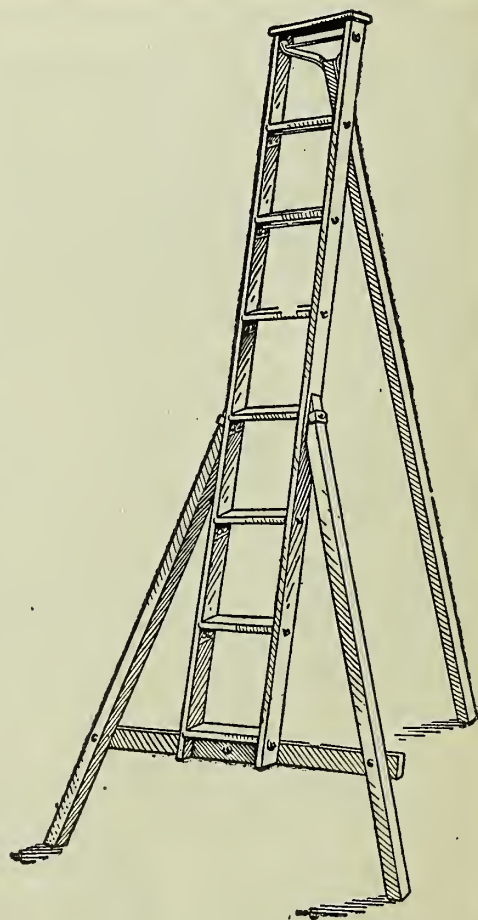
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United States Export Trade in Apples

(Prepared by the Division of Statistics, Bureau of Foreign and Domestic Commerce)

THE calendar year 1919 shows the most remarkable values in the history of the United States export trade in apples. These exports consisted of 24,704,359 pounds of dried apples, invoiced at \$4,109,828, and 1,712,367 barrels of ripe or green apples, worth \$14,471,282, or an aggregate value of \$18,581,110. This is an increase of 45 per cent in the total value, but a decrease of 36 per cent in the quantity of dried apples and 11 per cent in the quantity of fresh apples exported, as compared with the pre-war calendar year 1913, when the exports were 38,734,465 pounds of dried apples, invoiced at \$2,719,203, and 1,920,221 barrels of green or ripe apples, worth \$7,417,400, or an aggregate value of \$10,136,603.

The extraordinary fluctuations in the value and volume of this trade for the calendar years 1913-1919 may be noted in the table of exports and the average annual prices given below:

Year	Dried			Green or Ripe		
	Pounds	Value	Average price per pound	Barrels	Value	Average price per barrel
1913	38,734,465	\$2,719,203	\$0.070	1,920,221	\$7,417,400	\$3.80
1914	31,027,551	2,441,094	.078	1,541,361	5,695,621	3.70
1915	33,908,508	2,671,601	.078	2,176,992	7,686,992	3.53
1916	13,186,467	1,002,007	.076	1,670,543	7,205,766	4.31
1917	7,852,773	691,111	.088	958,104	4,496,707	4.69
1918	2,200,483	311,350	.141	579,916	3,135,203	5.40
1919	24,704,359	4,109,828	.166	1,712,367	14,471,282	8.45

The foregoing figures would seem to indicate that the ordinary laws of supply and demand as affecting values were inoperative during the war period and the peace year 1919. In the normal pre-war year 1913 the average annual export price of dried apples was \$0.07 per pound, and of fresh apples \$3.80 per barrel. The outbreak of the war cut off to a large extent the usual competition in European markets from the other great apple-growing countries — Australia, New Zealand, and Canada. As compared with 1913, there was a decrease in American exports of dried apples of 7,706,914 pounds in 1914 and 4,825,957 pounds in 1915, without a proportionate rise in value, the average annual export price for those years remaining \$0.078 per pound. The same paradoxical situation occurred in 1916, when the exports were 20,722,041 pounds less than in the previous year and the average annual export price dropped from \$0.078 to \$0.076. Likewise, exports of fresh apples declined 378,860 barrels in 1914, as compared with 1913, and the average price also declined from \$3.80 in 1913 to \$3.70 in 1914.

From 1916 decreasing exportation of both dried and fresh apples was a factor in the ascending scale of average annual export prices, which amount to \$5.40 per barrel for fresh and \$0.141 per pound for drier or evaporated apples in 1918, the last year of the war, and achieved the

high record of \$8.45 per barrel for fresh and \$0.166 per pound for dried apples in the peace year 1919.

The variations in the quantity, value, and average price in the export trade from month to month during 1919 are shown in the following table:

Months	Dried			Green or Ripe		
	Pounds	Value	Average price per pound	Barrels	Value	Average price per barrel
January	2,306,575	\$ 346,331	\$0.150	213,107	\$1,527,498	\$7.17
February	1,208,392	182,193	.150	493,996	3,792,361	7.68
March	2,838,155	428,737	.151	286,979	2,619,902	9.13
April	7,623,924	1,073,391	.141	137,409	1,455,211	10.60
May	1,178,257	219,095	.160	20,747	280,747	13.36
June	2,809,427	532,470	.190	8,610	101,733	11.30
July	1,562,188	299,855	.192	23,450	170,164	7.25
August	438,025	72,887	.166	21,659	162,860	7.55
September	561,773	121,405	.216	34,619	238,780	6.90
October	277,648	55,689	.200	115,715	1,038,251	8.97
November	1,815,234	343,561	.188	213,270	1,739,297	8.15
December	2,084,761	434,214	.208	142,806	1,344,478	9.40
Total	24,704,359	\$4,109,828	\$0.166	1,712,367	\$14,471,282	\$8.45

Unusually heavy exports of dried apples, running in millions of pounds, were made during each month of last year, except the principal harvest

monthly export price for the year, the highest, \$0.216 per pound, occurring in September, when the exports dropped to 561,773 pounds, valued at \$121,405.

The movement of green or ripe apples to foreign markets was heaviest during the first and last quarters of 1919. With regard to quantity and total value, the February exports of 493,996 barrels, invoiced at \$3,792,361,

or an aveage of \$7.68 a barrel, surpass those of any other month. May, however, records the highest monthly average export price on apples, reaching \$13.36 per barrel. September exports of 34,619 barrel, invoiced at \$238,780, disclose the lowest average monthly export price of fresh apples, \$6.90 per barrel, as well as the high record export price on the evaporated fruit. Diminishing stocks of fresh apples in cold storage naturally curtailed exportation for the six months, May to September.

The combined fruit crops of the United States perhaps exceed in variety, quantity, and value those of any other nation. The most important of these in the export trade is the apple. This country is one of the greatest fruit-consuming as well as

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fruit-producing nations on the globe, yet, in addition to the domestic consumption, \$122,678,783 worth of all kinds of fruit were exported during the calendar year 1919, of which 15 per cent, or \$18,581,110, was for dried and fresh apples, not including large quantities of canned and preserved apple products also exported. The distribution of these exports by principal countries during November and December, and for the calendar year 1919, was as follows:

total green and ripe apples exported, value at \$6,089,701, the United Kingdom took \$3,112,956 worth, Canada \$1,040,413, Germany \$916,883, Australia \$200,847, Argentina \$156,839, and Brazil \$124,520 worth, smaller amounts being shown for other countries.

War did not seriously interfere with the exportation of fresh apples from the United States to Great Britain, but rather stimulated the demand for the American product. During the

States, Canada 14.3 per cent, Germany 10.1 per cent, and all other countries 9.8 per cent.

As the Australian apples are marketed from May to August and the English crop from September to November, American exports are naturally largest from November to May, when the new crop is available at the most opportune time for marketing it in European countries. From the pre-war calendar year 1913 figure of \$3.80 per barrel for fresh apples to \$8.45 in 1919 an increase of 122 per cent is shown in the average annual export price.

Countries	Year ended December		December		November	
	Quantity	Value	Quantity	Value	Quantity	Value
Dried Apples	Pounds		Pounds		Pounds	
Belgium .....	.....	.....	.....	.....	2,013,180	\$366,059
Denmark	50,000	\$11,000	523,396	\$112,276	3,512,038	657,103
Finland	324,012	62,921	298,400	76,350	893,762	183,998
France	5,000	1,075	90,050	19,040	1,625,439	191,820
Netherlands	30,200	4,853	7,250	1,812	490,503	93,068
Norway	50,286	8,123	478,196	94,089	2,283,759	400,006
Sweden	1,279,568	238,225	506,573	89,363	7,309,782	1,296,930
United Kingdom	13,572	2,343	57,042	13,752	5,748,424	755,048
All other	62,596	15,021	123,854	27,541	827,472	165,791
Total	1,815,234	343,561	2,084,761	434,214	24,704,359	4,109,828
Green or Ripe Apples	Barrels		Barrels		Barrels	
Denmark	1,637	15,653	1,167	11,648	33,281	393,848
Norway	2,232	21,368	21,575	230,683	147,586	1,697,143
Sweden	349	3,625	.....	.....	34,950	457,119
United Kingdom	144,638	1,220,962	83,548	815,033	1,209,855	9,557,126
Canada	37,218	236,423	15,166	98,379	158,859	1,131,723
Mexico	4,360	33,417	3,945	35,251	23,565	193,541
Cuba	6,368	61,865	9,671	85,577	26,548	245,726
Argentina	2,510	33,250	.....	.....	15,159	207,822
Brazil	1,633	20,233	157	2,005	16,880	206,536
Philippine Islands	4,890	30,980	2,742	22,836	15,682	105,383
All other	7,435	61,521	4,835	43,066	30,002	285,310
Total	213,270	1,739,297	142,806	1,344,478	1,712,367	14,471,282

Since the colonial period the United Kingdom has offered the principal foreign market for fresh American apples, to which has been added in more recent times other British dominions, particularly Canada and Australia. Prior to the war Germany also bought liberally of the fresh fruit. In the fiscal year 1914, of the

five fiscal years, 1914 to 1918, the United Kingdom took 60 per cent of the quantity and 59 per cent of the value of the total exports of fresh apples from this country. During the fiscal years 1910 to 1914 the United Kingdom took an average of 65.8 per cent of the total quantity of fresh apples exported from the United

Fruit Growers Start Box Factory

Unable to obtain sufficient boxes in the Yakima and Wenatchee districts, a number of fruitgrowers there have engaged in the manufacture of boxes in Portland, Oregon. The plant of the new concern, which is known as the Bede Box & Lumber Company, is located on the Columbia river in North Portland. The new plant which has just been started is now turning out 20,000 boxes a day, and next year the owners expect to greatly increase the output. Although delayed in starting by the failure of machinery to arrive, the plant will turn out this year 600,000 boxes, which will be shipped to the Yakima and Wenatchee districts.

A feature of the plant is that it is manufacturing the boxes direct from the logs—a process that is said to be from 15 to 20 per cent. cheaper than the usual one of utilizing lumber. Equipped with electric power and the most modern box making machinery, the cost of manufacture is reduced to a minimum. The plant is 50x150 feet, and has a frontage on the river of 700 feet. Next year dry kilns will be built and other improvements made.

The men directly connected with the management of the enterprise are D. R. Loughlin, M. Harkema and D. H. Armstrong.

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Apple Crop Estimated at 175,000 Cars

THE Denver & Rio Grande Railroad Company has recently issued a report on the estimated volume of this year's commercial apple crop in the United States and Canada. The report is based upon data secured from personal night letter reports received from members of the American Railway Development Association living in commercial apple districts of the United States and also state board of agriculture statisticians, the fruit commissioner of Canada and Canadian Pacific Railroad.

The total estimated shipment of commercial apples for North America for this season is 175,500 carloads.

Barrels are scarce and are costing growers from \$1.25 to \$1.50; boxes are costing growers from 27 to 32c. It is predicted a large volume of apples will move in bulk.

The average all-around condition or quality is 70 per cent against a ten-year average of 61 per cent.

The final estimate of the apple crop in the United States for 1919 was about 130,000 cars.

District	% of Crop 1919	% of Crop 1920	Estimated Volume of 1920 Crop in Cars	Container Used
1. New York	34	86	20,000	Bbl.
2. Penn.	40	80	2,150	Bbl.
3. Md., Va. and W. Va.	43	62	22,000	Bbl.
4. S. E. Group (Tenn., Ga., Ala., N. C.)	25	68	3,750	Bbl. & Box
5. Michigan	42	82	11,730	Bbl.
6. Ohio and Ind.	20	65	7,000	Bbl. & Bu. Bskt.
7. Illinois	26	65	9,000	Bbl.
8. Ozarks (Mo. and Ark.)	72	47	5,230	Bbl.
9. Colo. and Utah	58	79	4,500	Box
10. N. W. District (Mont., Ida., Wash. and Oregon)	81	71	25,000	Box
11. Canada	90	70	12,600	Bbl. & Box

Transplanting Deciduous Fruit Trees

By J. C. Whitten, Professor of Pomology, University of California

THE growth and development made by a deciduous fruit tree the first years it is in the orchard is perhaps more important in determining its productivity and efficiency than is any other year in its life history. In handling the tree every possible precaution should be taken to avoid drying the roots by unnecessary exposure to the air; the roots should not be bent or kinked in planting; dead, fibrous rootlets should be pruned away; the roots should not be exposed to freezing temperatures; usually the tree should be set no deeper than it stood in the nursery (most fruit trees are set too deep); the soil should be pressed firmly about the roots; the roots should not be bruised in handling; roots and tops should be properly pruned at the time of planting; the tree should be white-washed as soon as possible after planting in winter. Most of these suggestions are well understood by the experienced fruit grower; most of them are well neglected by the average operator who plants the tree. If most of our transplanted fruit trees live we are apt to think they were properly handled. As a matter of fact fruit trees are tenacious of life. They may endure lots of abuse and still live, but abuse weakens them. In my judgment more than half the fruit trees planted yearly in the United States make less than half the growth they should make the first year in the orchard. These observations should not be regarded as a reflection upon the fruit grower, for it is the successful fruit grower with whom I have been intimately associated, who first called these suggestions to my attention. Some of them have been still farther emphasized by investigations which these fruit growers stimulated.

Before planting the trees the soil should be plowed to a good depth and as carefully pulverized as is required

for a seed bed. If there is a hard plow-sole beneath, the plow should be followed by a subsoiler. If the land is crusty or cloddy on top, it should be disked to pulverize the surface before plowing. This avoids turning under large clods, which can not be pulverized by the disk or harrow after the plowing is done. Such clods turned under leave air spaces which will dry out. If the subsoil is reasonably porous, the use of dynamite will not be necessary. If there is a shell of impervious hardpan a few feet below the surface it is advisable to explode a stick or half stick of dynamite below each tree hole to crack through the hardpan shell to porous subsoil below. If hard subsoil is too deep to crack through to a porous layer beneath, the value of dynamite is doubtful. It may form an undrained water pocket below the tree. Dynamite should be used only when the subsoil is dry and brittle, so it will be shattered by the blast. Dynamiting wet wet subsoil puddles it.

If the soil has been thoroughly worked throughout the orchard, the holes should be dug only deep enough and wide enough to accommodate the natural spread of the roots of the trees. If the holes are dug deep the soil and young trees may settle after planting, leaving the tree set too deep. If, however, replants are being set in an established orchard the holes should be dug deep and broad enough to cut back the roots of surrounding trees, so they can not compete with the roots of the replant. Often the roots of three or four year old trees may spread to the openings where replants have died out.

Every reasonable precaution should be taken to avoid exposure of the roots of the trees to the air in handling. The tops of trees are adapted to exposure to dry air; the roots are not. Even under favorable conditions the roots of trees

are necessarily exposed more than is good for them, between digging in the nursery and setting in the orchard. When received from the nursery, trees should be "heeled" in a trench, getting moist soil pressed firmly in contact with the roots as soon as possible. In handling trees to "heel" them in or to plant them in the orchard the roots should be dipped in a thin "puddle" of soil and water to hold a moist layer on the roots and avoid drying. Careful experiments covering several seasons show that any exposure of the roots to drying out weakens them, and that the more they are exposed between digging and planting the less growth they make, the larger percentage that will die the first season and the more susceptible they become to sunscald, borers and many other troubles.

It is a fact not heretofore generally known that the roots of fruit trees are easily injured by slight freezing. The roots are adapted to soil temperatures which rarely fall more than a few degrees below freezing, even in northern climates. Careful investigations show that the roots of our hardiest fruit trees, such as the northern native plum, are usually killed at a temperature of twenty-two degrees, or ten degrees below freezing. The roots of peaches,

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apricots and the more tender fruits usually "kill" at five or six degrees of frost. The wood within the roots quickly turns brown at such temperatures, while the wood of the stems and branches may endure temperatures far below zero without injury. Such trees may look all right when planted, but may fail to grow and finally shrivel in the orchard because the roots were dead. The roots may be badly injured even by two or three degrees of frost. It is safer not to expose the roots to the air whenever the temperature is as low as thirty-two degrees Fahr.

The tree should be set so as to retain the natural spread of the roots. A main root should not be crooked in setting. Bending a root restricts the passage of water through the water tubes in the wood. It is almost impossible to firm the soil around a very long root without leaving kinks in it. It is safer to cut long roots to six or eight inches in length, so they will not be bent in tamping the soil about them.

In handling nursery trees most of the small, fibrous roots die before the tree is finally set in the orchard. If left on the roots they are not only use-

less but are injurious to the tree. These dead, curling fibres prevent getting the soil in close, firm contact with the larger main roots, which are alive and which must be depended upon to supply the top with water from the soil until new fibrous roots form. The small, dead fibres should be pruned away, cutting them within about one-fourth or one-half inch of the main root—usually the basal stubs of these small roots remain alive. Their cut ends increase greatly the absorbing surface of the roots, until new root growth begins.

Usually the tree should be planted no deeper than it stood in the nursery. The young tree forms its roots in the nursery at that depth which is most congenial to their development. New root growth starts more promptly where the soil warms first near the surface. Deep set roots often do not start new growth until the trees are out in leaf and thus calling for much water to supply that which is evaporated from the leaves. Most planters set trees too deep. The earlier roots start growth after planting, the deeper they will grow during the season and the more satisfactory will be the growth of the tree above ground. In transplanting trees from a nursery having a heavy, cool soil, to an orchard with loose, sandy, well aired soil, which warms and dries quickly to a good depth, the roots may be set correspondingly deeper.

This point can hardly be over-emphasized. To get the soil firm it should be tramped firmly with the heels from the bottom of the hole up. If as much as six inches of soil is filled into the hole without tramping it can not be made firm about the roots. To get water enough the roots must come in close contact with thoroughly compacted soil in which there are no large pockets.

Press between roots rather than against them. Bruised roots can not make proper growth and are susceptible to crown-gall, oak fungus, root insects or diseases that may enter through wounds.

Shorten this whip to twenty-four or thirty inches in height. This gives opportunity to space the new limbs six or eight inches apart, where they arise from the trunk, when they start in spring. About three main limbs should be arise from the trunk the first year. The intervening shoots should be pinched back to three or four leaves each. This will encourage full development of the main branches where they are desired. The short intervening, leafy twigs, shade the trunk and elaborate plant food to favor greater growth of the tree. If the tree is well branched at the time of planting, three or four strong nursery limbs may be allowed to remain, properly shortened, to become the first framework of the tree.

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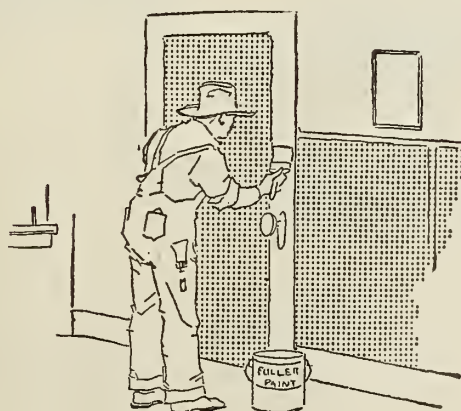
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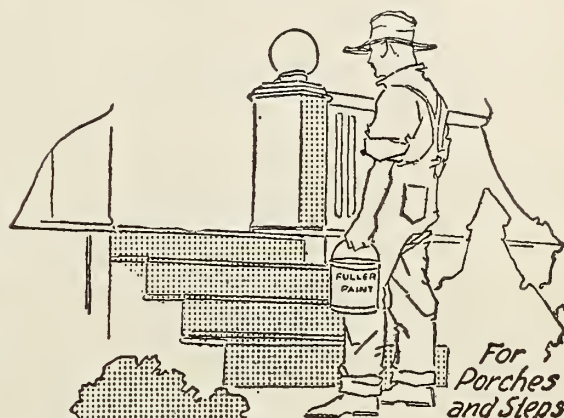
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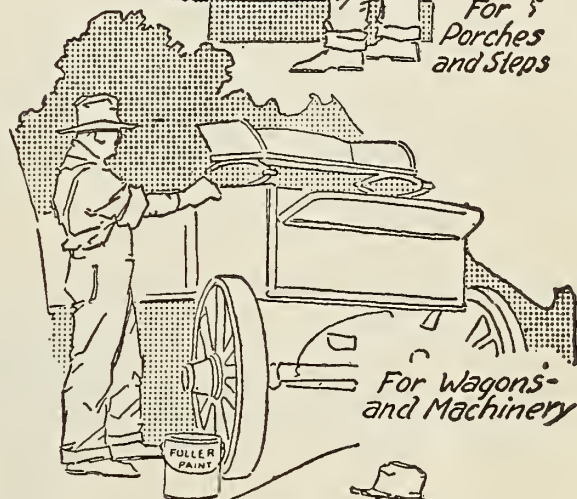
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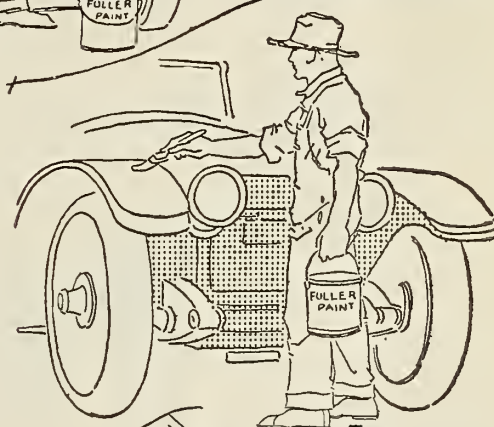
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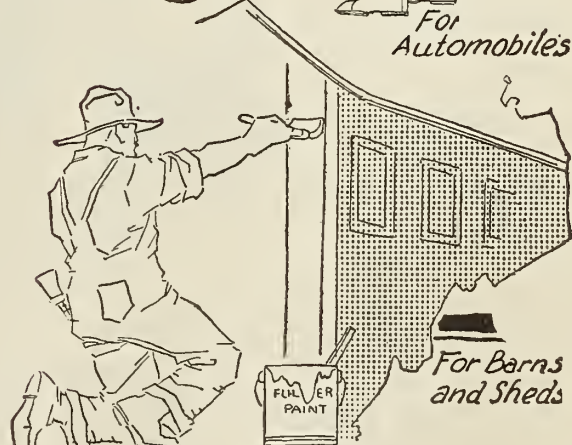
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Northwest Fruit Notes from Here and There

OREGON

Hood River apple growers figure that the increase in freight rates will cost that section an additional \$200,000 this year. The increase will apply to about 75 per cent of the crop from that district which will move to points east of the Mississippi river and also to shipments that will go to California.

The sale of the J. D. Housley pear orchard at Medford to County Pathologist C. C. Cate is reported. The orchard consists of 40 acres in pears in a fine state of cultivation and the sale price as announced is \$23,000. Another sale of orchard property in the Rogue River valley recently of more than usual interest was the transfer of the Austin Corbin ranch near Eagle Point to Fred C. Bell, a Chicago capitalist. The Corbin ranch consists of 250 acres, 49 of which are in pears, 71 in apples and 30 in grain. The remainder is in meadow and woodland. The sale price was \$80,000, according to the reports from that section. Mr. Bell, it is stated, expects to manage the ranch personally.

Two Royal Anne cherry trees at Roseburg, Oregon, are said to have netted their owners \$250 for their fruit this season.

According to the announcement of a local fruit buyers at Salem, the loganberry crop within a radius of ten miles of that city amounted to 6,600,000 pounds of berries and should return to the growers at the prevailing price of 13 cents per pound approximately \$850,000.

Reports from The Dalles are to the effect that there has been a very marked recovery by the orchards in that section from the effects of the extreme cold of the past winter and that the damage was practically limited to cherry trees.

It is estimated that \$40,000 will be distributed this year among the farmers and orchardists in the Hermiston district from honey sales. The bees, to produce this honey, were pastured on the alfalfa fields and orchards in the Umatilla project in this section, which was developed some years ago.

A number of the leading handlers of fruit in the Rogue River valley have recommended that all fruit to be packed in that district be wiped before delivery to the packing houses. This action has been taken to meet the objections of some of the eastern horticultural inspectors against fruit showing an excessive amount of arsenate of lead spray.

The pear harvest in the Hood River valley, which commenced the latter part of August, as well as the harvest of Kings and Gravensteins, is said to be showing a considerable reduction as compared to the early crop of pears and early apples last year. The pear crop in the Hood River valley is now estimated at about 45 per cent of that of last year, when something over 113 cars were shipped. The harvest of the main apple crop in this section is expected to begin this year about October 1. There will be sufficient local labor, it is stated, to handle the pear crop and outside help will not be needed until October.

The Myrtle Point district is figuring that when the evergreen blackberry crop is fully harvested between \$15,000 and \$18,000 will have been paid out for this fruit in that section. The berries are being handled by the Myrtle Point cannery.

While most people do not in any way connect the Tillamook country with the fruit business, considerable interest is being taken there in developing the berry business. There

were about 50 acres in loganberries in the Tillamook country this year and the nearby foothills produced \$15,000 worth of blackberries. The moist climate of the Tillamook country seems to be especially adapted to the growing of loganberries, which attain a larger size than in any other section of the state. Loganberries at Tillamook attain a size of 1½ to 2 inches and in addition yield heavily. The berry products of the Tillamook country are being largely handled by the Graves Canning Company, which has a small plant located in the Cheese City. A beginning has also been made in this district in growing strawberries.

The prune crop in the Sheridan district, which will be largely handled this year by the Oregon Growers Cooperative Association, is expected to be largest in the history of that section. A 40-tunnel dryer, which the association is having erected there, is rapidly nearing completion and will greatly aid in solving the dryer problem of the growers, which last year was serious. There will also be a large apple crop in the Sheridan district of fine quality this year.

The pear crop of the Rogue River valley, the harvesting of which was started about the middle of August, will total 700 cars, according to local estimates. The shipment of apples is expected to reach 500 cars. The yield of pears, it is stated, is 15 per cent greater than was anticipated early in the season. Mention is made of the fact that for the first time in the history of the fruit business in Oregon solid trainloads of pears were shipped this year from the Southern and Western Oregon districts.

F. L. Kent, field agent for the bureau of crop estimates, places the Oregon apple crop at 3,425,000 boxes for 1920. Of this estimate, Mr. Kent reports that about 60 per cent is of commercial quality. The 1919 apple crop was 5,579,000 bushels, showing that there is a big falling off in the estimate for this year's crop.

SPECIFICATIONS

Weight: 166 lbs.

Material: Carefully selected Western Fir and Pine. Oversize wrought iron shafting and rods used throughout. Castings carefully moulded in our own foundry with a view not only for appearance, but great strength.

Finish: Handsomely finished with three coats of high-grade paints and varnishes.

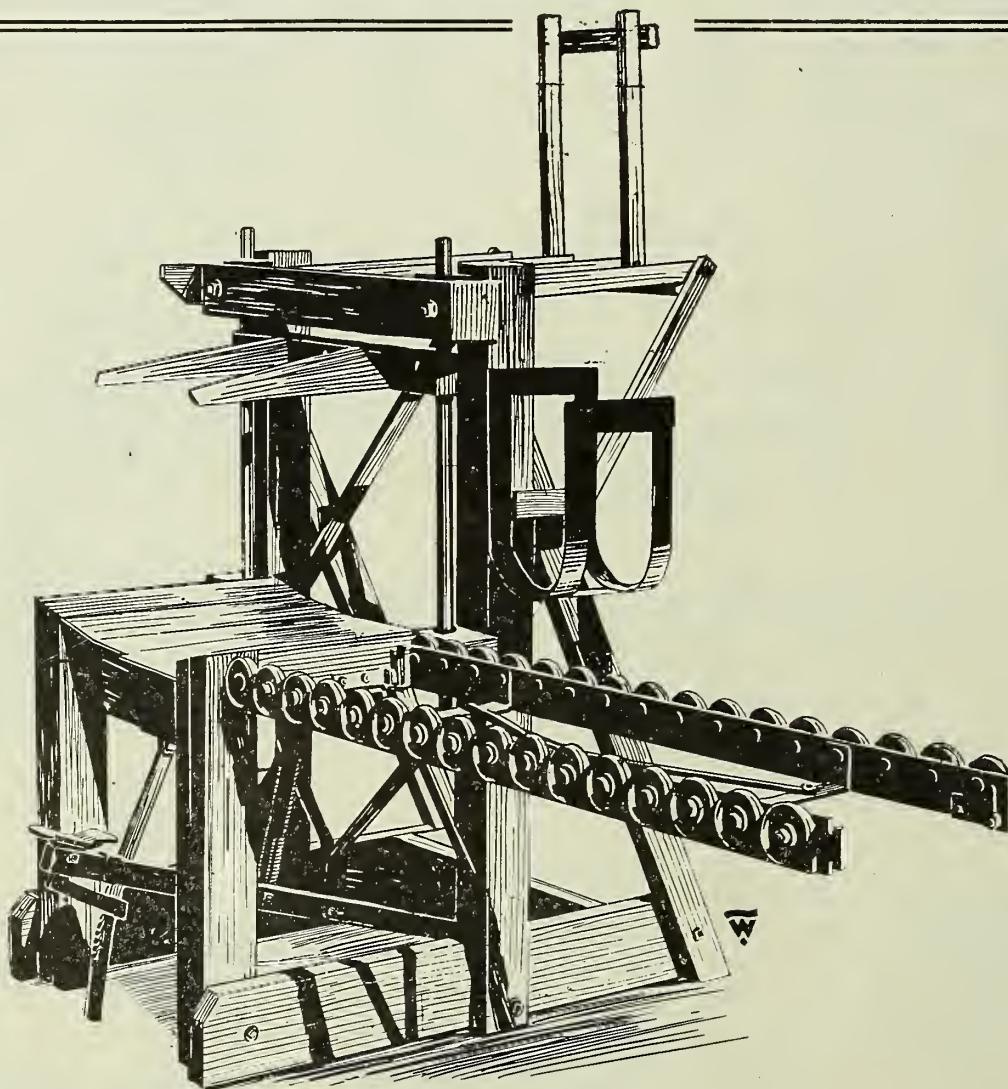
Floor Space:

Depth, 40 ins.

Height, 50 ins.

Width, 26 ins.

The Success Box Lid Press is as fine a product for the Orchardist, the small and large packing house, as ingenuity and thorough investigation, combined with long experience, can produce. It is equipped with stripper rack, folding shelf for lids and cleat holder rack, with lugs on both sides and back for gravity conveyor.



CAPACITY

For the rapid, economical and convenient handling of fruit boxes of various sizes at highest speed.

Adjustable arms of great strength and rigidity makes this possible.

Automatic positive patented foot clutch, single pedal, reversible ratchet and dog add immensely to both speed and durability of the press.

Pressmen who have used them, claim the Success will outlast and outwork any other press on the American market. It receives or delivers boxes from either side or rear over a frictionless curved metal bottom, which eliminates the necessity of ever having to lift the box as it is being received or delivered. This press will positively cut your expense and increase your profits.

Success Box Lid Press—Price Complete, \$75.00; less 5% cash with order

Dealers, write for territory. Good sales assured.

SUCCESS SEED GRADER CO., Inc.

Manufacturers: Success Seed Graders, Pea and Bean Threshers and Orchard Supplies

SPOKANE, WASHINGTON

Cherry orchardists at Cove, who, in 1917, signed a three-year contract to market their cherries for \$80 per ton, are said to have seen their fruit this year sell on a ready market at \$200 to \$150 per ton.

The Oregon Agricultural College, which will hold its horticultural show November 5 and 6, is planning to have it outdo all former exhibits. An attractive program and premium list is being arranged and the college announces that it will pay express charges on all fruit sent it for exhibition, but will retain the fruit after the show for its own use.

Strawberry plants for fall setting are reported to be in strong demand, although prices are ruling high. The strawberry acreage that will be set in the state this fall and next spring it is reported will be extensive.

Clayton L. Long, formerly of the University of Ohio, has been appointed extension horti-

cultural specialist at the Oregon Agricultural College. Mr. Long took up his duties at the O. A. C., August 1st.

The prune crop of Oregon and Clarke county, Washington, for this year, is estimated by C. I. Lewis, organization manager of the Oregon Growers' Cooperative Association, at 60,000,000 pounds of dried fruit. The Oregon prune crop, as estimated from other sources, is placed at 50,000,000 pounds. The apple crop of Western Oregon is placed at 1000 to 1100 cars.

Open air meetings and picnics of the members of the Oregon Growers' Association, which were held during the month of August at Salem and Roseburg, were well attended. Interesting programs were provided. The principal speaker at the Salem meeting was Dr. F. M. Coleman, editor of the *Sunsweet Standard*, house organ of the California Prune and Apricot Growers' Association. Others who

were on the program to speak were Senator Charles L. McNary, Prof. H. P. Barss, Prof. A. L. Lovett and C. I. Lewis.

WASHINGTON.

Apricots and peaches from the Yakima valley, which went on the market in the early part of August, brought good prices according to a report on crops and crop movements in Washington, made by M. L. Dean, chief of the state division of horticulture. Early prices for apricots reached \$150 per ton, although later the price declined. The prices received for peaches ran from \$1.00 to \$1.25 per box. Contract prices for Bartlett pear canning stock were started at \$70 per ton, with later offers of \$90 per ton reported. The Bartlett pear crop in the Yakima valley is variously estimated at 900 to 1200 cars. Believing that this is a year when grade will cut a big figure in the price of box apples, Mr. Dean is warning growers to bring both grade and pack up to the top notch. Owing to the uncertainty of transportation conditions, apple buyers, he says, will insist on the fruit being in the best possible condition before it leaves the point of production.

The melon acreage in the state of Washington showed a considerable increase this year over that of 1919. Approximately 2,000 cars of cantaloupes and 500 acres of watermelons, it is estimated, will be shipped during the present season.

Wenatchee is one of the Washington districts that has a bumper crop of pears and 550 carloads are reported to have been contracted for in that district at prices ranging from \$70 to \$80 per ton.

With the other fruit-shipping districts in Washington, Wenatchee is entering a strong protest against the recent increase in freight rates on apples. It is estimated that this district will have to pay from \$1,350,000 to \$1,875,000 more in freight rates under the increase than it paid last year.

The second annual prune harvest festival, which will be held under the auspices of the Prunarians, will take place at Vancouver, Wash., this year, September 16 to 18. In addition to the entertainment that will be provided for visitors, there will be cash premiums offered for fruit, nuts, vegetables and other farm exhibits, as well as boys' and girls' club displays. A canning exhibit will be another feature.

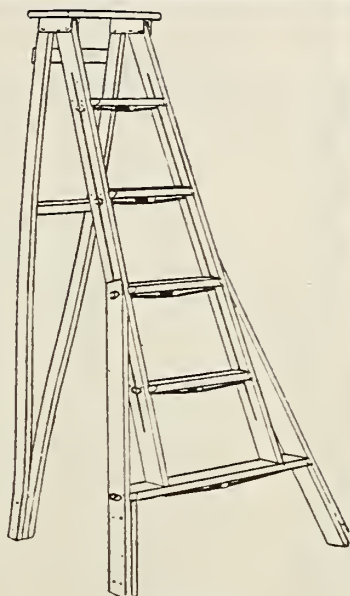
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Light and strong, clear, well-seasoned spruce, re-inforced under each step, wide spreading side legs makes this the ideal picking ladder. Your pickers will work faster because they know they are safe.

The Hardie Mfg. Co.

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If one BUMP equals one BRUISE, if one BRUISE equals the difference between Extra Fancy and Fancy apples, if that difference equals a material difference in your profits then you have REASON No. 1 why you should haul your apples in a two-ton pneumatic tired GMC TRUCK.

BUGS

If the BUGS on your fruit trees in the spring of the year affect your crop then you have REASON No. 2 why you should buy a GMC TRUCK and equip it with an ordinary three-cylinder pump with a 200-gallon tank on a sub-frame and spray with a saving of 60% over horse operation.

Think over these two reasons and then INVESTIGATE GMC TRUCKS BEFORE YOU INVEST.

Seattle
Spokane

ELDRIDGE *Buick* SALES CO.

GMC ON A TRUCK IS LIKE USA ON A BOND

Yakima
Walla Walla

H. A. Glen, agent of the Northern Pacific at Yakima, has completed his estimate of leading crops of the Yakima valley which will require refrigerator car service. Mr. Glen says there will be 150 cars of peaches this year, as compared with 2,000 last year; 425 cars of melons and cantaloupes as compared with 400; 500 cars of mixed fruit as compared with 350; between 10,000 and 11,000 carloads of apples as compared with 11,540 carloads last season. Mr. Glen's apple estimate is generally accepted with surprise. Most orchardists had believed the crop this year would be far less than that a year ago, but Mr. Glen explains the fruit will be larger and there will be fewer culls, though probably not so many apples.

Many Washington shippers are said to be already making preparations to secure space in refrigerated steamships sailing from Seattle to New York, via the Panama canal. In case the full increases in freight rates granted to the railroads stay in effect, it is claimed apples can be shipped much more cheaply by steamer through the canal than by rail.

The Wenatchee section of the Spokane fruit district, comprising Chelan, Okanogan, Douglas and Grant counties, will produce only 9533 carloads of apples in 1920, compared with 12,500 cars raised last year, according to District Horticultural Inspector P. S. Darlington's estimate recently completed. Virtually every portion of the district shows a decrease. Wenatchee and vicinity, which last year grew 3825 cars of apples, will have only 2650 this year. Cashmere shows an increase from 1392 cars last year to 1500, forecast for 1920. Omak shipped 663 cars last year and will have only 450 this year. Okanogan drops from 330 to 290, Brewster from 332 to 250, Entiat from 577 to 450, Pateros from 440 to 275, Olds from 828 to 600, Dryden from 480 to 350 and Peshastin from 460 to 350, according to the estimate. Monitor indicates a slight increase from 628 cars last year to an estimated crop of 700 cars this year. Mallott, Wagnersburg and Chelan Falls all have the same estimated yield as last year, and Chelan, which yielded 484 cars last year should have an increase to 500 this year, according to the July estimate.

Grant county will just about hold its own with about 300 cars. The Moses Coulee section will ship 125 cars, the same as last year, it is estimated. The yield of summer fruit in the district this year is given as 1,000 cars, compared with about 1,400 cars last year. Pears show an estimated increase from 500 to 550 cars, cherries are the same at 100 cars, but peaches and apricots show a heavy falling off.

The first Winter Banana apples of the season were shipped out of Wenatchee July 29 for Alaska. This is the earliest shipment of winter apples out of the district by about 10 days.

A number of new fruit warehouses, costing several thousand dollars each, will be erected by the Spokane Fruit Growers' Company, according to an announcement by Luther N. Flagg, president. The new buildings will be erected to handle this season's apple crop and will be located in several of the districts included in the organization of the Spokane fruit growers.

Despite unusually dry weather, the apple crop in Arcadia is reported to be looking unusually promising. It was found necessary in some sections, to do considerable thinning to secure a good harvest of extra fancy stock. Work on the warehouse, 60 by 100 feet, at Arcadia is progressing. The structure will be completed by October 1. The growers' association begins at once the erection of another warehouse at Denison to care for the harvest at that point. This building will be 50 by 130 feet, of concrete construction.

**Meet Me at the
Big Hood River Fair
Sept. 17th and 18th**

TREES AND SHRUBS



Fruit trees budded from bearing orchards. Apple, Pear, Cherry, Peach, Plum, Prune, Apricot, Quince, Grape Vines, Shrubbery, Plants, Raspberries, Blackberries, Logans, Dewberries, Asparagus, Rhubarb, Flowering Shrubs, Roses, Vines, Hedge, Nut and Shade Trees. Carriage paid. Satisfaction guaranteed.

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Toppenish, Washington.
Salesmen everywhere. More wanted.

Expert Orchard Service

We contract the planting and care of Nut Groves, Fruit Orchards and Berry Farms.

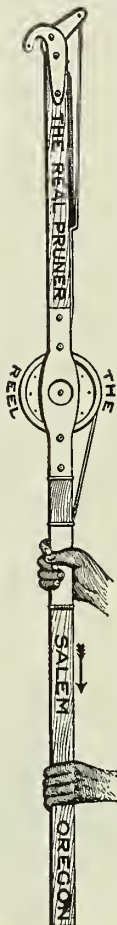
Run down properties inspected and methods of renovation outlined.

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Sales of choice Nut, Fruit and Berry Properties.

(We are Agricultural College Graduates
with a wide orcharding experience)

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The Real Pruner

Fastest, Smoothest Cutting and Most Powerful Practical Pruner on the Market.

A Real Pruner That Makes Pruning Easy.
SAVES TIME, TREES AND MONEY

WHY?

BECAUSE—

It makes a perfectly smooth cut and does not crush the fiber, thereby leaving the ends of the limbs open to the ruinous attack of insects.

It has a steel hook that will not bend out of line.

Both hands on the pruner at all times gives perfect control. The instant you hook over a limb you cut it off no matter at what angle.

No limb too hard or tough. It cuts them easy.

Simple in construction. Nothing to get out of order.

Always open.

All parts are die stamped and interchangeable and can be replaced at any time.

Endorsed by pruning experts.

It Has No Competition—One Demonstration Proves It All.

The Real Pruner will be demonstrated at the Oregon State Fair, September 27-October 2. Do not fail to see it.

Manufactured by

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Vetches, Alfalfa, Clovers, Grains, Grasses

Selected Recleaned Farm and Field Seed at Lowest Market Prices.
Special Mixtures for Wet Land—Dry Land—Burns—

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OUR SEED LABORATORY is in charge of a skilled analyst and all "DIAMOND QUALITY" Seeds are TESTED for PURITY and GERMINATION

WRITE TODAY FOR SAMPLES NOTE THEIR PURITY and WEIGHT

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PORTLAND SEED CO.
PORTLAND, OREGON



Western Agents "CLIPPER" FANNING MILLS

IDAHO.

H. A. Lyon, director of the Bureau of Markets, has issued a statement in regard to Idaho's fruit crop prospects, in which he says: "Idaho anticipates a bounteous harvest this season and if prices remain good, farmers of the Gem state are bound to be prosperous, as an excellent crop from the field and the orchard is the present outlook.

"For the first time, the true orchard acreage of the state is known and files of the Idaho Department of Agriculture give a description as to acreage and varieties of every orchard. These records show 26,759 acres of apples, 3,962 acres of Italian prunes, 308 acres of cherries, 480 acres of peaches, 50 acres of apricots, and 284 acres of pears, or a total of 31,848 acres. With such records as a guide, it has been possible to make a worth-while estimate of production from the visitation and reports of 22 horticultural inspectors.

"The detailed estimate shows 4,769 cars of apples, 1,818 cars of prunes, 64 cars of cherries, and 5 cars of pears, with peaches a minus quantity, because of severe winter killing. However, when deductions are made for home orchards and home consumption, it appears that Idaho will ship about 4,000 cars of apples, or approximately the same amount as last year. In 1919, the Boise valley had a small crop, while the Payette section, includ-

ing Fruitland, had plenty of apples, but this year the tables are turned about and the Boise valley has a bumper crop of both apples and prunes, with an estimate of somewhere near 800 cars of apples and 1,000 cars of prunes.

"Nineteen twenty has seen the Bureau of Plant Industry putting over as good a campaign against orchard pests and diseases as any state can boast of, and it is expected that the four or five hundred cars of culls of 1919 will be reduced to less than 100 cars for the present season. Through the efforts of the State Department of Agriculture in its rigid inspection of shipments, as well as orchards, fruit growers have come to a realization that thoroughness and caution are essential if fruit growing is to be profitable.

"Few states, if any, have as extensive and efficient a system of grading as does Idaho and fruit growers as well as farmers in general are rapidly coming to a real appreciation of the superior prices which come from the production and sale of products of real quality."

The harvesting of early apples has commenced at Lewiston, Idaho. For the first time in several years a considerable part of the crop will be labeled "hail-marked," as the western section of Lewiston orchards was hit by a severe hail storm several weeks ago.

With the cherry crop in the Lewiston, Idaho, district at about half its normal output, it is estimated that the tonnage from the valley reached 90 carloads this year, including the cannery pack. Sixty-two carloads were shipped out by the American Express Company, and the Oregon Packing Company says it canned 100 tons of the Clarkston cherries alone. The shipment of cherries in barrels was an important item at Lewiston this year. Approximately 500 barrels of 250 pounds each, or a total of 125,000 pounds, in from seven to eight carloads, were shipped by Bailey and Wicks of this place to the Puyallup Fruit Growers' Association, at Puyallup. These were all of the Royal Anne variety.

Contracts have been made at Latah, Idaho, at \$60 a ton bulk for pears, the growers picking the pears in boxes furnished by the cannery and delivering them to the railroad.

What They Are Doing In California

The California apple crop is estimated this year at 3,500,000 boxes, as compared to about 5,000,000 boxes last year.

According to a statement from the California Peach Growers' Association, the opening prices on dried peaches for 1920 should net growers 17 cents a pound as against slightly less than 15 cents a pound in 1919.

The prune crop in Butte county, California, is said to be exceptional this year in that 80 per cent of the crop is averaging 50s in size. A heavy percentage of the crop will run to 30s and 40s, it is predicted.

Another dehydrating plant, which will be erected at Paso Robles, it is believed, will adequately take care of all the fruit and vegetable tonnage in that district. With the building of the new plant, Paso Robles will have three drying plants.

In the San Luis Obispo district one firm has placed an order for 30,000 almond trees to be planted this fall, and it is stated that there is a probability of the planting of 1,000,000 almond trees in this county this season. A large cannery is also in prospect in this district to take care of a prospective planting of 1,000 acres of tomatoes.

The chambers of commerce in many of the districts in California have started a campaign to insure labor for harvesting fruit and have very materially assisted ranches in getting the needed help during the fruit season.

Prices for the 1920 prune crop which were recently announced by the board of directors of the California Prune and Apricot Growers, Inc., assure the prune growers who are members of the association another golden harvest equal in value to the record-breaking one of last year, according to a statement just issued by the association. The prices named are three cents a pound higher than last year's prices on 20-30's, from a cent to a cent and a half higher on the next three sizes, the same price as last year for 60-70's and slightly lower on the smaller and less desirable sizes. On sizes from 20-30's to 60-70's inclusive, which usually comprise about 73 per cent of the crop, the average price for this year's crop is one and a third cents a pound above the price the growers received for these sizes last year. The prices announced for 1920 crop of prunes are: Sunsweet quality, 20-30's, 25 cents a pound flat; 30-40's, 17 cents bulk basis; 40-50's, 15½ cents bulk basis; 50-60's, 13 cents bulk basis; 60-70's, 11½ cents bulk basis; 70-80's, 10½ cents bulk basis; 80-90's, 9½ cents bulk basis; 90-100's, 9½ cents bulk basis. Growers' Quality was set a half a cent a pound less than Sunsweet.

Bits About Fruit, Fruitmen and Fruitgrowing

There were 10,200,899 pounds of shelled walnuts, valued at \$5,317,276, imported into the United States during the calendar year 1919. The greater amount of these walnuts were imported from France.

According to reports from the eastern barrel apple-raising districts there is a gain of nearly 4,000,000 barrels of apples over the crop of last year. The information is also forthcoming that barreled stock will be more carefully guarded this year than formerly. This is said to be particularly true in the eastern states, where the competition between box and barreled fruit is the keenest.

Notwithstanding the fact that attention has been repeatedly called to the fact that it is necessary to take extra care in preparing box apples for export, the United States Bureau of Markets is again warning shippers to select the strongest boxes for the export trade and to have them secured with iron straps.

J. & H. GOODWIN, LTD.

Apple Exporters

Headquarters in United States
60 State Street
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*The Largest Handlers of American Apples
in English Markets*

You can send your apples direct from the United States into the industrial centers of England. The same organization (J. & H. Goodwin, Ltd., throughout) which ships your fruit from the U. S. A., sells and distributes in London, Liverpool, Manchester and Hull, and on the European Continent.

This means quick handling, considerable economies and the fruit being sold in the freshest possible condition, which means greater returns.

For dependable export information write or wire us at 60 State St., Boston, Mass. or 97 Warren St., New York City.

The Northwestern Lid Press

The last operation in harvesting should be done with extreme care. No other press will give you as perfect pressed and lidded boxes as the Northwestern. A pack of which you can be proud.

The automatic lid placing device insures accurate placing of the lids. Enables the operator to properly lid more boxes in a day.

Anyone can be an expert on a Northwestern Press.

Send for descriptive catalogue.

Place your order now through your local dealer or direct to us.

Send for free catalogue of Orchard and Packing House Supplies.

The Hardie Mfg. Co.

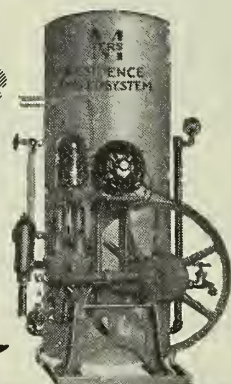
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The MYERS SELF-OILING ELECTRIC HOUSE PUMP is a Servant guaranteed by MYERS to give satisfaction in any home. Here is the latest and most improved type of MYERS "Honor-Bilt" Pumps for city, suburban and country residences. It brings instant relief from water drudgery for the entire family and soon becomes the "head servant" of the house.

It is a remarkably compact, well built pump, neat of design and nicely finished. For safety, efficiency and economy, it has but few equals. Operation any electric current, automatically controlled, self-oiling, covered working parts and other features insure perfect water service for home or farm. Ask your dealer or write us. Attractive Catalog on request.



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Portland, Oregon
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HAVE YOU BOUGHT YOUR APPLE BOXES?

If not, our advice is to buy now. The present car shortage is causing slow shipments. As crop movement gets under way this situation is certain to grow worse.

We can furnish standard apple boxes, crates and cases of selected material, well manufactured. Standard or special shook to order.

Our prices are right. Write today for our list.

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1018 White Building
Seattle, U. S. A.

WHEN WRITING ADVERTISERS MENTION BETTER FRUIT

The long haul to the Atlantic seaboard, loading the boxes on the ships and the additional railroad haul on the other side of the continent makes it necessary to have the export packages of fruit securely packed and bound.

The International Apple Shippers' convention, held in Chicago during the middle of August, was one of the most largely attended in the history of the organization. The new officers of the association are: E. T. Butterworth, of Philadelphia, president; D. N. Minick, Chambersburg, Pa., vice-president; George W. Davidson, New Orleans, treasurer; R. G. Phillips, Rochester, N. Y., secretary. The executive committee are: W. L. Wagner, Chicago, chairman; Wayne M. French, New York; J. J. Castellini, Cincinnati; E. H. Neustadt, Milwaukee; Edgar W. J. Hearty, Boston.

An announcement from Consul General Skinner at London is to the effect that the British Food Controller has released both domestic and foreign apples from price control in Great Britain from August 1 to November 14, after which the maximum control retail price will be resumed, at 20 cents instead of 18 cents per pound. A new schedule of wholesale prices on fruit is said to be in course of preparation.

The New York State Evaporators' Association, which handles one of the largest outputs of dried apples in the country, looks forward to a successful season, according to a statement made by The Evaporator. It is not believed, however, that although there is a much larger prospective crop of apples for drying, that prices will rule much lower than last year, when 15 to 18 cents per pound was paid for the loose product.

A noted visitor to the Northwest during the month of August, who is interested in the fruit industry, was Emilio Schenk, professor in an agricultural institution in Brazil. Professor Schenk, who visited Southern Oregon, Hood River and other sections, spent his time studying apple and pear culture. He investigated the blight resistant pear stocks, which Professor F. C. Reimer is developing at Talent, Oregon. Professor Schenk made the statement that Brazil has 100 different kinds of pears and apples under cultivation, but that few commercial orchards have been developed so far. The citrus fruit industry is largely engaging the attention of fruit growers in that country at the present time, according to Professor Schenk.

Cannery Notes

The Rupert cannery at Lebanon, Oregon, which this year was greatly enlarged, will handle a large tonnage of canning products in that district. The company is stimulating the interest of ranchers there in planting fruits and produce and expects that its intitution at Lebanon will eventually be one of the largest if not the largest in the state. It receives its products from a widespread territory around Lebanon as well as shipments from other sections of the Willamette valley. A large quantity of loganberries were put up this year and its output of blackberries is expected to be one of the largest in the state.

The cannery of the Puyallup and Sumner Fruit Growers' Canning Company at Albany successfully opened its canning season during July. The establishment, which is a large and modern one, employed 200 girls during the height of the season. Before the blackberry season closes it expects to handle 500 tons of this fruit.

About eight tons of loganberries and an equal quantity of cherries was put up daily by the plant of the Brownsville Canning Company at Forest Grove this year, during the season for these fruits.

The cannery of the Eugene Fruit Growers' Association is reported to have canned a cherry crop of more than 2,000,000 pounds this season. This is said to be the largest pack of cherries ever put up by a fruit cannery in Oregon. Eugene growers are reported to have received about \$250,000 for their cherries this year.

The plant of Libby, McNeil & Libby at Yakima, Wash., established a national record for the quantity of cherries canned this season, according to G. B. Kile, superintendent, who says over 739 tons of cherries were handled, as compared with 660 tons in 1918.

Ten tons of cherries a day is the canning record this season of the cannery at Coeur d'Alene, Idaho.

At the price of loganberries this year, growers in the Willamette valley section of Oregon received large returns from the canneries for their product. It is reported that for one week's delivery of loganberries a grower in this district received a check for \$19,863.

- SYKES SYSTEM OF FRUIT PACKING -

2 BUSHELS GRAPE FRUIT
EXPORT PACKAGE

2 BUSHELS APPLES
EXPORT PACKAGE

RED APPLES
140 PACK

300
LEMONS

140
NEWTOWNS

140
WINE-
SAPS

140
SPITZ

140
NEWTOWNS

189
NEWTOWNS

120
NEWTOWNS

120
SPITZEN-
BERGS

120
WINE SAPS

ORANGES
IN
PEACH BOX

ORANGES
IN
PEACH BOX

140
SPITZEN-
BERGS

140
SPITZEN-
BERGS

ORANGES
IN
PEACH BOX

ORANGES
IN
PEACH BOX

ORANGES
IN
PEACH BOX

TANGERINES
IN
PEACH BOX

APPLES
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Ample Protection Proper Ventilation Thorough Refrigeration
Effective Display Easier to Pack and Less Costly

A BETTER WAY

We will soon give you some remarkably favorable results of cold storage tests showing great improvement in SYKES pack compared to wrapped pack in the matter of scald.

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Portland, Oregon

PACIFIC FOLDING BOX FACTORY
San Francisco, California

Picking and Handling Fruit in the Orchard

By C. B. Woods, Formerly Horticultural Inspector in Washington

A FEW brief statements on picking and handling fruit in the orchard should be of interest and value to growers.

In the first place growers should be equipped with good picking ladders for each picker. Climbing into the trees is a bad practice and should not be permitted as many fruit spurs are broken off in this way and branches scarred, making splendid quarters for insects, especially woolly aphis. Oftentimes the weight of a person bends the limbs down so much that the cambium breaks and the branches remain drooping instead of swinging back in place when relieved of their burden of fruit. Many branches are broken down entirely under the weight of a picker, hurting the shape of the tree. If a tree is properly trained, ladders can be placed so as to enable one to pick the entire crop without any trouble. A large part of the crop can be picked from the ground in most cases. However, a picker should not be allowed to pull down on the branches as this may result in as much damage as climbing.

Picking bags have not been a success for when filled with fruit they are subject to many bumps, each bump causing a loss of a dozen or more apples by bruising. Many times it is necessary to cull out from 50 to 60 per cent of a crop because of bruises and this means a big loss to the grower. A picking bucket has given much better results and saves a lot of fruit.

Every fruitgrower is anxious to realize as much as possible from his orchard. To do this he must give the trees a great deal of care and attention. In picking the fruit, do not take off all the fruit spurs as well, even though you may intend to sell your orchard soon after harvest for the new owner will be just as anxious to harvest good sized crops from these same trees. "A sheep shearer doesn't skin the sheep just to get the wool," though I dare say some of them are almost as bad as some apple pickers. Often a trunk full of spurs is found scattered under a tree after a day's run and it takes from three to four years to grow a good sturdy spur. In picking take the apple in the palm of the hand, not letting the tips of the fingers touch the fruit. Don't pull, but simply lift and turn the back of the hand toward the spur just a little and the apple is yours. It is much quicker and easier to do it this way

and means better crops in the future.

All wheel conveyances should by all means be equipped with good springs for fruit hauling. All irrigated fields should have roads run through them with a spring tooth harrow or an orchard cultivator just before picking time. This will help to cut down your cull pile to a great extent.

Care should be taken not to make boxes too full and then setting other boxes on top of them. This will not only bruise a few apples on top, but will hurt practically all the apples in

the box. Apples which have just been picked should not be left in the orchard exposed to the sun as they will sunburn quickly, and this hurts their keeping quality. If there is no shelter in the orchard, get them out of the fields as fast as possible and place them in your packing house. Stock the fruit in such a way that it will have a good circulation of air. See to it that you have ample ventilation and give the place plenty of cool night air.

Take care of the culls as fast as they accumulate as the worms are leaving the apples at this time in search of winter quarters and the packing house is usually good life insurance for them.

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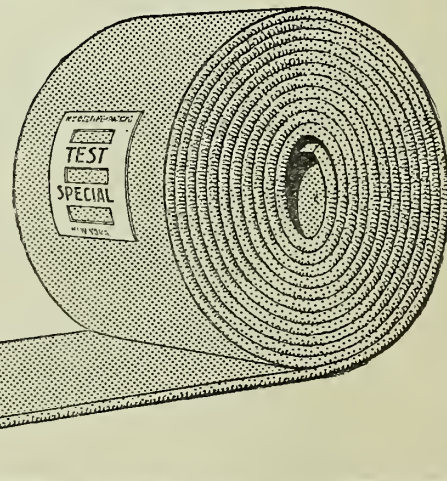
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Observations On the Evaporation of Prunes

Continued from page 5.

high as twenty-two per cent without any apparent injury to the keeping quality of the prunes. It is desirable to have as high a moisture content as is compatible with good keeping qualities. As a rule, the prunes having the higher moisture content seem to have the better quality. It is to the interest of the growers that the best quality of prunes possible be placed on the market. The moisture must be dried out to a point where the prunes will keep well, but a point higher than that is undesir-

able both from the point of view of the quality of the fruit and from the point of view of profit to the growers. Table IV shows the effect of the drying time on the average weight per bushel secured in some of our prunes used in experiments.

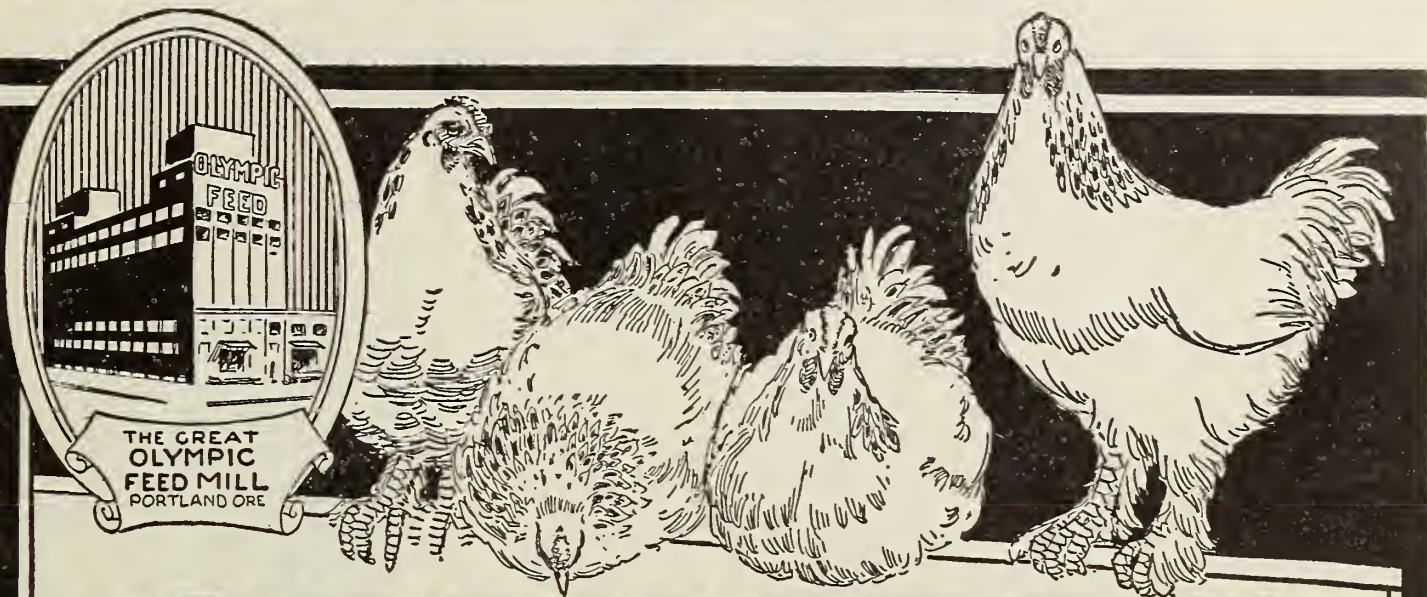
TABLE II.—EFFECT OF DRYING TIME.

No. of Trays	Drying Time	Av. Wt. per bu.	Drying
174.....	29 hrs. 13 min.	20.54	34.21%
235.....	36 hrs. 35 min.	19.88	33.13%
611.....	45 hrs. 00 min.	19.28	32.13%
325.....	52 hrs. 8 min.	19.20	32.00%
202.....	77 hrs. 00 min.	18.49	30.81%

The figures given in Table II were taken from data collected over a period of two years and represent the number

of trials in each case. The gradual decrease of the drying percentage as time increases is probably a true indication of what may be expected with evaporation methods commonly practiced. Where prunes are dried very slowly, they have a tendency to take on a dull, unattractive appearance, and during the season of 1914 mold appeared on such fruit. With such prunes the temperature had probably been kept altogether too low.

Drying Time Important. There seems to be very little change in the drying percentage until the drying time becomes abnormally long. There is, how-



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YOU don't expect blood from a turnip. Likewise, unless you have supplied your fowls with plenty of backbone and strength, you cannot expect continual egg production. The best egg mash or tonic only assists the hen—it takes a strong, robust constitution to withstand steady laying. Such constitutions are the result of feeding **OLYMPIC** Scratch Feed.

This strength-building feed contains the following properly balanced ingredients: Wheat, Cracked Corn, Milo Maize, Hulled Barley, Hulled Oats, Sunflower Seed and Buckwheat. Made from carefully selected whole grains, cleaned and well mixed, you'll find no better poultry feed than **OLYMPIC** Scratch Feed. Every handful is uniform and free from dust.

OLYMPIC Scratch Feed comes in three classes or grain sizes. Baby Chick Scratch, with tiny but uniformly ground grains, suited for the first three week's feeding. Growing Chick Scratch, a little coarser grains, that appeal to the growing youngsters until about eight weeks old, is the next step. From Growing Chick Scratch they graduate to the full sized grains of **OLYMPIC** Scratch Feed.



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ever, a marked difference in the appearance, texture, and flavor of the fruit. These seems to be better where the drying time is relatively short, and less favorable where the drying time is increased. It must constantly be borne in mind, however, that shortening the drying time will not always give a higher drying percentage; for if a dry, parching heat is used from the start to finish, the prunes will have a distinctly tough skin, glossy, black color, but will dry away badly. The drying time seems to be of very little importance except to show the presence or absence of ideal conditions. If all conditions are

favorable for good evaporation, the process will be fairly rapid and the drying time relatively short. If the drying time is abnormally long, the operator should know that either his methods are not the best, or else the building is faulty in construction.

There seems to be little change in the appearance of the prunes during the last six or eight hours of drying. As the amount of moisture in the fruit becomes less, the amount evaporated in a given time also becomes less and the air is not cooled as rapidly as was true when the prunes were giving out lots of moisture. The greatest loss of mois-

ture seems to occur when the humidity of the air is between ten per cent and fifteen per cent. Finishing the product in a high, dry, parching temperature, seems to produce a less desirable fruit.

Economies Possible. The air at the lower or finishing end of the tunnels is practically dry at all times. A slight increase in humidity was observed when the weather was clear and warm, over that noted when cold, rainy weather prevailed. A greater difference prevailed, however, at the upper or starting end, where during clear, warm weather, the humidity of the air was about thirty per cent, but during cold,

The Complete Dormant Spray

—controls fire blight as well as scale

DISCARD knife and saw and paint as a remedy for fire blight. You can control fire blight, collar rot and other orchard troubles with Scalecide — "the complete dormant spray."

Scalecide kills the hold-over cankers that cause twig and fire blight. It cleanses and disinfects the canker; it causes the old, blackened bark to peel off and new cambium to form. No other spray does this.

What Scalecide Does

Scalecide kills scale, insect eggs and fungous spores that winter over on the bark. It cleans up the trees so thoroughly that their increased vigor is strikingly noticeable the following season. The Fall application kills the adult Pear Psylla before it lays its eggs. A Spring spraying, just as the buds show green, kills aphids. Either of these applications controls blight.

Penetrates and Invigorates

Scalecide is a soluble and miscible oil—not only an insecticide for scale, but it has both fungicidal and germicidal properties. And because the oil globules are broken up into such microscopic particles they are able to penetrate the diseased bark and tissues, and thus reach the bacteria that cause fire blight. Scalecide actually penetrates and invigorates the plant tissues.

Saves Labor

One barrel of Scalecide does the work of three and a half barrels of lime-sulfur. 800

gallons of Scalecide (diluted 1 to 15) goes farther than 1,600 gallons of diluted lime-sulfur, and of course you can put on 800 gallons of Scalecide in much less time than 1,600 gallons of lime-sulfur.

Protects Your Spray Pump

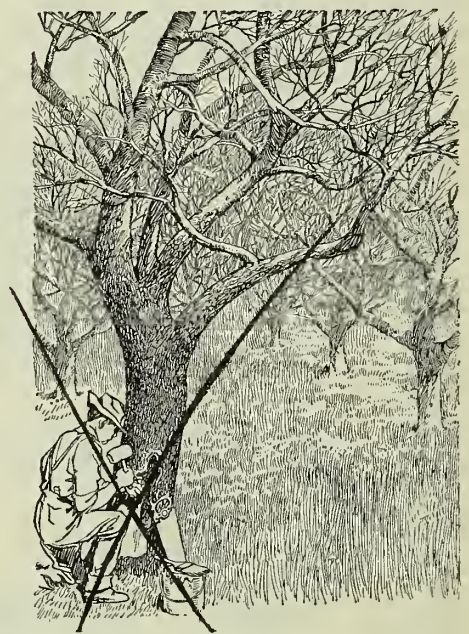
Lime-sulfur eats out the valves and other parts of the spray rig with which it comes in contact. It causes the spray hose to crack and go to pieces. Scalecide, because it is an oil, helps to protect the spray pump from wear and tear and prolongs its life; it makes the pump run easier and develop higher pressure.

Pleasant To Use

Lime-sulfur burns the hands and face, often injures the eyes, takes the hair off the horses and eats the harness—it is extremely disagreeable to use. Scalecide soothes the skin, does not injure the eyes, improves the hair on the horses, softens and cleanses harness—it is pleasant to use.

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For ten years we have been conducting spraying tests in our own large orchards, which now total 26,000 trees. The most important result of this practical work with Scalecide in our own orchards has been to discover and confirm many valuable properties of Scalecide: its invigorating effect upon the trees; its economy; its effectiveness against fire blight; and its unequalled effectiveness against insects



and diseases of all kinds that winter on the tree. We recommend Scalecide to you as fruit growers.

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Name.....P. O.....State.....25

rainy weather the average was about fifteen per cent to twenty per cent and at times ran as low as five per cent. These facts become important when we consider the importance of returning some of the heated air, passing it over the fruit a second time. By mixing some outside air with that already heated to 135 degrees and passing this mixture over the furnace, the humidity could be controlled and the amount of heat required lessened.

When air is taken in the furnace pit at a temperature of forty-five to seventy degrees, which commonly occurs during the period of evaporation, a large amount of heat is required to raise the temperature to 160 degrees. Since the air passes off at the upper end at a temperature of 120 to 140 degrees, a large amount of heat is lost. The removal of the moisture from the air by condensation is doubly expensive in that the cost of cooling is added to that of reheating air from a low to high temperature. If, by the use of forced air currents, the greater part of the air could be returned to the furnace pit at a temperature of 120 degrees or better, much of the cost of heating could be reduced. Possibly methods will be evolved, some time, so that much of the heat which is now entirely lost can be used.

As soon as the prunes are finished they should be removed from the trays while still warm, the dobies should be re-trayed and re-dried. The prunes are then taken to the bins or piles to cure until sold or ready for processing.

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Operating Air-Cooled Apple Storage Houses

Continued from page 10.

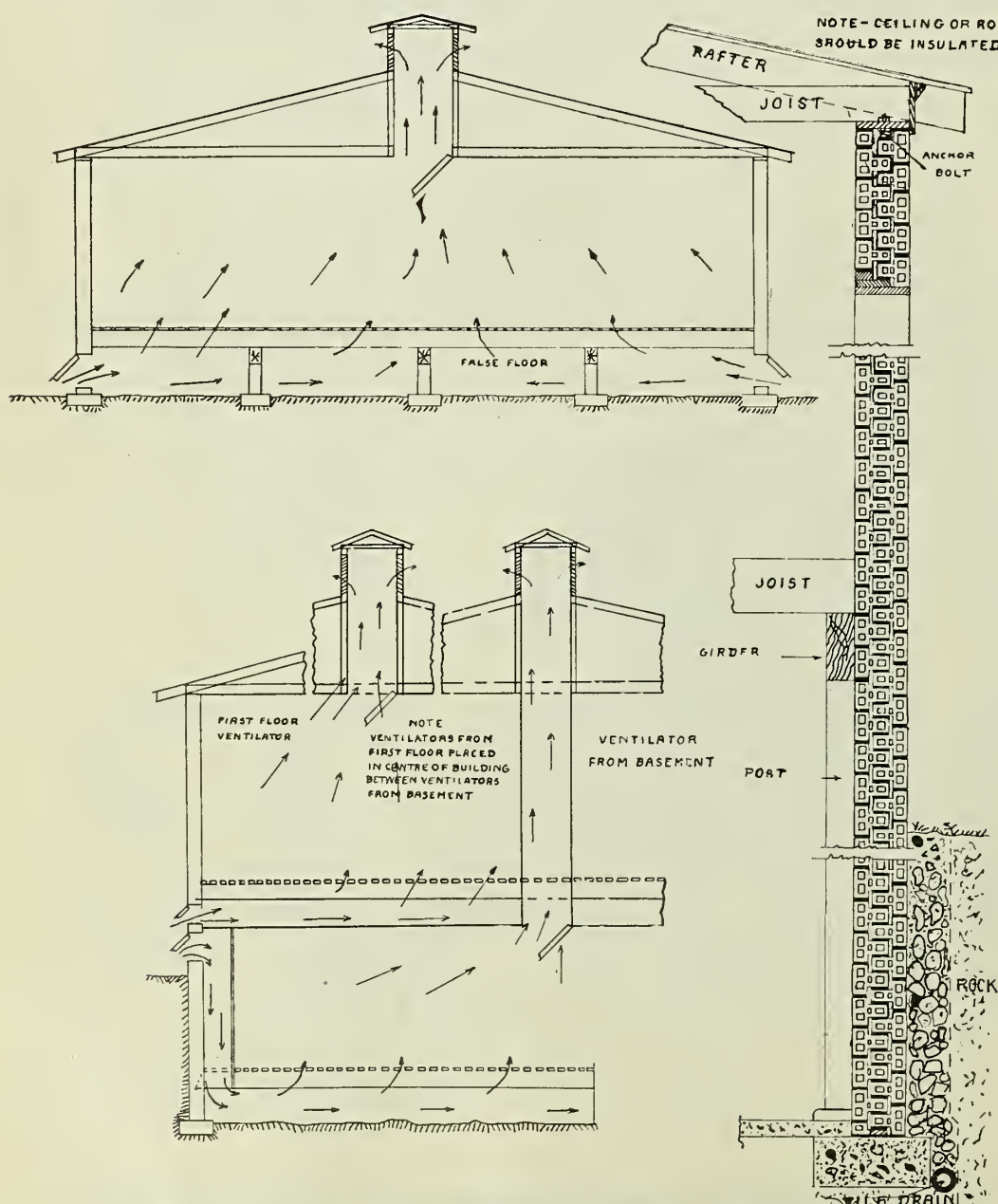
through the vents and air shafts at the ceiling.

This action is almost exactly the same as in an ordinary chimney, the only difference being that the air in the ventilating flue is not nearly as warm as that in the chimney; therefore, the tendency to produce a draft in the flue is very much less than in a chimney of equal height. The difference in air pressure induced by the difference in air temperature is so slight that circulation is easily checked if the air passages are small or crooked. To obtain free, abundant circulation it is necessary that the air openings be of liberal size, that the air shafts be straight and direct, and that these shafts extend through the roof to a considerable height above it.

To cool a large mass of warm fruit in a storage house requires the circulation of very large volumes of air. To cool the fruit at all quickly the air must either be very cold or the circulation must be very rapid. Warm fruit in closed boxes or barrels will stand a current of air at freezing temperatures for several hours without

damage by freezing. The cooling of boxed or barreled fruit by a gentle current of moderately cold air is therefore necessarily extremely slow. The temperature of the fruit, even near the outside of the package, changes but slowly. Farther inside the package there may be no appreciable cooling until the outside fruit is materially cooled. Likewise, packages within large compact stacks of fruit will not commence to cool to any extent until the outside packages have been reduced considerably in temperature.

The slowness with which the fruit is cooled, even under the best of conditions, emphasizes strongly the need of both the free and the rapid circulation of cold air. The necessity for free, unobstructed circulation is further increased in the early autumn, when the coolest outdoor temperatures are moderately warm. In order to accomplish any appreciable cooling at such times, large volumes of air must be circulated through the fruit. Quick, prompt cooling may add weeks, even months, to the period during which apples can be held in good condition. The relatively short time during which apples can be kept in good condition in some storage



Showing method of ventilating a modern air-cooled storage house built of hollow tile.

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houses is caused very largely by delayed cooling and by the storage of fruit at temperatures that are too high.

The rate of cooling of fruit in an air temperature of 32° F. is none too fast, especially in the center of a package or in packages within a stack of fruit not properly spaced. It is not uncommon to find overripe, badly decayed apples in the center of a barrel held at regulation cold-storage temperatures. This overripeness is due mainly to the slow cooling of the fruit in the center of the barrel. If overripeness and deterioration caused by slow cooling occur in cold storage houses, it is not to be wondered at that stock frequently shows overripeness and bad condition at the end of only one or two months in common storage.

The difference in the weight of air due to differences of temperature is so slight that natural circulation is, at the best, slow. If, as frequently happens during the autumn or early part of the season, the outside temperature does not go below 45° or 50° F., the rate of cooling will be exceedingly slow. Not only are the lowest temperatures that are possible under such conditions relatively high, but the circulation of the air is correspondingly slow. The amount of heat that slowly circulated air at relatively high temperatures removes from the fruit in a given time is very small. Even with the outside temperatures near freezing, weeks and months may be required to reduce by natural circulation all the fruit in tight containers in large stacks to the desired storage temperature.

To cool the fruit with a reasonable degree of rapidity, the air circulation must be free and abundant. Openings a few inches in diameter are entirely inadequate to provide the necessary air circulation. Few houses have either a sufficient number of openings or openings of sufficient size to be effective. Openings a few inches in diameter, such as are very often provided, may be adequate during the winter after the fruit has been thoroughly cooled and when the outside temperatures are much colder than in early autumn. It is during the first part of the storage season, however, when the coldest outside temperatures are rather high and it is difficult to secure effective cooling, that the critical period, both in the life of the fruit and in the management of the storage house, occurs. The openings, therefore, must be of a size to permit the free, abundant, and rapid circulation of air.

Unfortunately, there are few accurate data on the size and number of ventilators necessary to cool most effectively and quickly a house of a given size with air of a given temperature. The rate of cooling will naturally depend on the outdoor temperature, the size of the house, the quantity of fruit in it, and the temperature of the apples when stored.



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The limited data at hand and practical experience emphasize strongly the need of large openings to effect a free and abundant circulation. The openings for the intake of cold air should be at least 24 by 18 inches. One such opening should be provided for every 10 feet in length, as well as width, on each side and end of the house. These openings should be opposite and so arranged that the alleys or spaces between the stacks of fruit in the storage room will come opposite the openings.

Operation of Ventilators.

As previously explained, the movement of air is brought about by the difference in weight of the warm and the cold air. Whenever, therefore, the interior of the building is warmer than the outside air, the cold air will flow in through the lower ventilators if these are left open. The warmer air in the house passing out through the upper ventilators will be replaced by an equal volume of colder air flowing in through the openings at the base of the building. It is therefore necessary that the temperatures, both inside and outside, be watched carefully and advantage taken of every opportunity to open the house when the air outside is colder than that inside. Air currents through the intake and discharge vents are quickly reversed as soon as the relation of the inside and outside temperatures is change. As soon, therefore, as the air outside becomes warmer than that inside the storage house all ventilators should be tightly closed and kept closed.

During the first part of the packing season it is not an uncommon practice to leave the ventilators open all day as well as all night. This practice is contrary to the very principle of cooling by ventilation. If these openings or ventilators are not closed and opened in conformance with actual inside and outside temperatures, they are of no use, and the fruit might as well, or better, be stored in open warehouses. If the vents are left open during the heat of the day, not only will there be a loss of the beneficial effect of the cooling accomplished at night, but the fruit will lose its keeping quality more rapidly than if held at a uniform, even though somewhat high, temperature.

The most careful attention to the proper closing and opening of ventilators is absolutely essential. No other factor of management is of greater importance in determining the efficiency of an air-cooled storage house. The openings at the end will be of great assistance in facilitating rapid cooling and the maintenance of the desired storage temperatures.

If the house has not been provided with ample intake vents, the basement doors and those nearest the floor level may be left open on cool nights and made to assist greatly in securing low temperatures. Slatted doors, if necessary, can be provided to keep

out intruders and can be so arranged as not to interfere with closing the insulated door; and, as has been noted, this must be done before the temperature of the outside air begins to rise with the heat of the day.

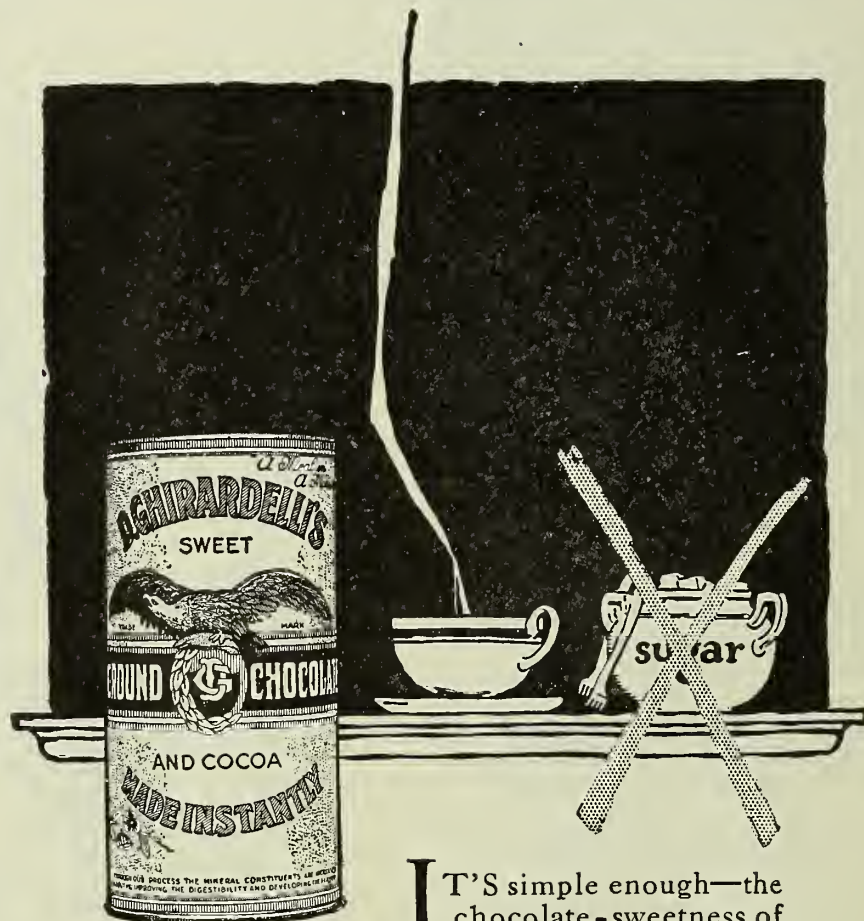
If the house is built with a basement or a half basement, the cooling of this compartment may be greatly facilitated by providing air intakes by means of large tile or cement pipes connecting the bottom of the basement with the lowest near-by outside depression from which water can not be drained into the house. The cold air which naturally collects in the depression will thus be permitted to flow into the storage compartment.

The air shafts for carrying off the warmer air ought to be at least two feet square and should be provided

with a closing damper. One such shaft for every 20 feet in length should be sufficient. These shafts should be straight and should extend as high as practicable above the building.

Where storage houses are entirely above ground or partly below ground, false floors will greatly aid in facilitating the free circulation of air and the rapid cooling of fruit.

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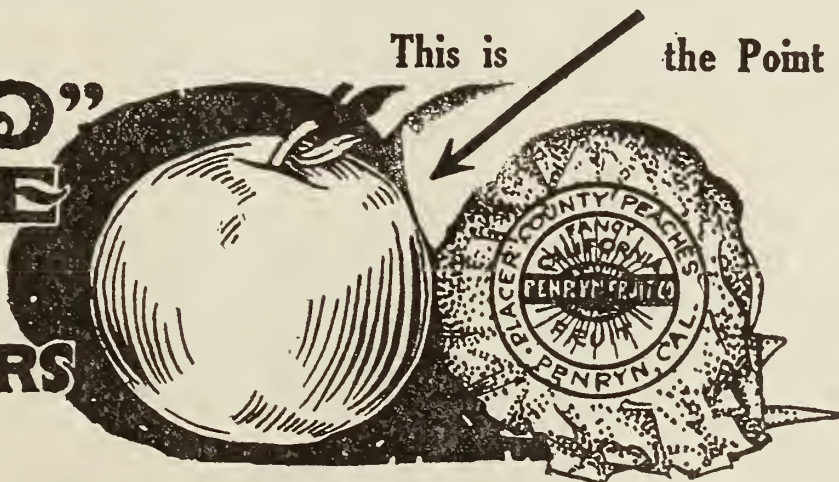
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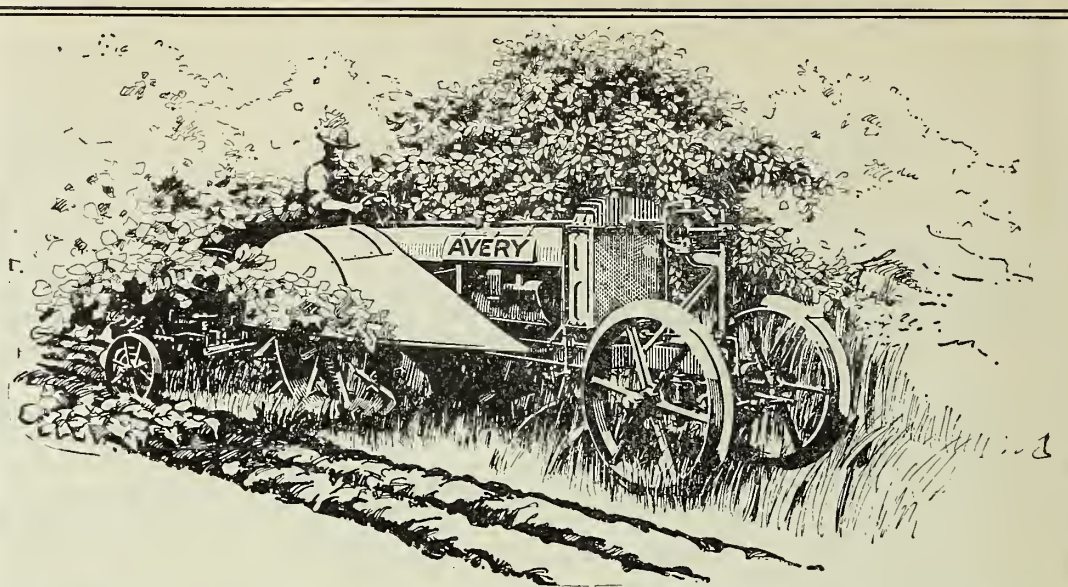
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Here is exactly the type of power outfit that practically every orchard owner needs. It will take the hard work out of turning under your cover crops and enable you to plow and cultivate the soil between the trees without injury to the branches. It also will supply you the needed power for pulling your spraying outfit, and, in addition, can take care of all your light belt work as well as other power jobs about your farm.

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